









THE EALL OF ICARUS.

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# EXPERIMENTS AND ADVENTURES

ATMOSPHERE.



HATTON TURNOR,



LONDON:
CHAPMAN AND HALL, 193, PICCADILLY.
1865.

"Astra Castra, Numey Lumby."

Motto of the LINISLIN.



PO

THE LADY CAROLINE TURNOR,

AND

CHRISTOPHER TURNOR, Esq.,

IN GRATEFUL REMEMBRANCE OF

THEIR PAPENTAL CARE

AND APPECTIONATE TEACHING OF GOD'S WORD,

THIS VOLUME IS DEDICATED

BY THEIR SON,

CHRISTOPHER HATTON TURNOR.

1 concurve it to be the duty of every educated person closely to watch and study the time in which he lives, and, as far as in him lies, to add his humble mitter of individual exertion to further the accomplishment of what he believes Providence to have ordained.—"Season or THE PROVIDENCE OFSERVE, MANY 21st, 1850.

"There are speak in the blackery of every green speciation and in the contrast of every undertaking, to which the cooperations of messive generations of such zero contributed (especially and as have received their interments at various and remote periods of history), when it becomes desirable to pusse for a while, and, as it were, to take societ, to review the propries make, and evinitus the amount of work them; not an undertaken, and the completency, as for the purpose of ferming a judgment of the efficiency of the amount of work them; not use of the object, to to construct the limits are periods of the object, to to construct the him assertion and social undertakings, such passes and réconé are cultiently metal, and are construint forced on our consistention by an outpoint of reterminations with all the constructions of the complete of the subscience which allowed for secondly allogue us to take a cop-fici of the whole subscit, and make up our minds, not only us to the validity of what is done, but of the manner in which it further programs.—Such and Theorem.

# PREFACE.

THE Author has endeavoured in the following pages to do justice to the ubiquity and importance of a subject which must in some degree be of great interest to all, for the medium which forms its basis is the air, in which we all "live and move, and have our being."

Franklin aid of the science of Aerostation, "It is on injent, but it will grow." The discoveries and inventions relating to the uses which have hitherto been made of the atmosphere, and the mathematical deductions which so clearly teach in to hope for the practicability of aerial navigation, have never yet been described in a manner worthy of the luman life hitherto scrifficed in unavailing attempts, nor of the confidence in altimasuccess with which those are now inspired, who have patiently and laboriously considered the unestin in a nathematical and selectific point of view.

Beyond the outlines to be found in Encyclopedius, no general synopsis of the Science of Aerostation has hilterto been published in England, except Monek Massor biref account in 1851; yet the number of English ascents and aeronauts more than doubles those of the French, who have had their experiments recorded by two historians since 1850. The present aerount, however, is not confined to England but wherever an adventure has courted, or a conregion attempt has been made, it is here recorded.

The story extends over eighty years. In that time many namphlets, letters, engravings, and caricatures have appeared in reference to this important subject. All the writers exhibit much arbour, many show scortility; their productions have here been carefully collated and formed into a summary: if inaccuracies should have imadvertently arisen in the process, the Author will gladly see them corrected.

Public attention has been recently aroused from the lethargy of "hope deferred," by the experiments of Mr. Coxvell, one of the boldest pioneers of the science of acrostation; especially when, in the company of Mr. Glaisber, the eminent Meteorologist, he made as

ascent which was thus mentioned in a leading article of the Times, on the 11th of September, 1862:—

" It deserves to take its place among the unparalleled junctures, and the critical and striking moments of war, politics, or discovery;"

and again :-

"The courage of the men of science deserves to have a chapter of history devoted to it."

Aerostation may, indeed, be well considered as a branch of science, which displays, among other qualities, the largest amount of physical courage in its professors.

The Author has ventured to add this contribution to the History of Aerostation in the long that his resches will observe how much the subject differs from other sciences in the impossibility of keeping it concealed from public observation during the progress into matrixy, and of permit gir into a sparten before it empty, appear matrixes in an imperfect state; and this would appear to be one of the greatest difficulties with which it has to control.

The Author trusts that when full publicity shall have been given to the comparative narity of accidents, and the causes whence they have arisen, many persons may be induced to avail themselves of that enjoyment of Nature under novel aspects, from which they are now deterred by the apprehension of personal danger. Schiller says of Columbus—

> With tirnius, Nature ever stands in soleum union still, And ever what the one forceds, the other shall folfil.

May this prove true of the assertion that we shall containly bring into useful subjection, all the atmospheric currents, which for the present buffle our attempts to subduc or control them! If any means should hereafter be found for rendering the science of aerial navigation practically and generally useful, how apt would then be the following quotation from Milton:—

Th' invention all admir'd, and each, how he To be th' inventor miss'd; so easy 't seem'd Once found, which yet unfound most would have thought impossible:

Notz.—A discussive chapter has been added, on what Sie Buleer Lythou defines as the "normal clairrespace of ports' insujention;" and it will be found that it is a rewarbable one, representing on it does the thoughts of so many age and constrict on one subject.

WINCHESTER, May 1865.

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# THE PHOTOZINCOGRAPHS.

The description of the Plates having been innovertently omitted in this edition, the following list of them, with the pages opposite to which thry are placed, may be in some degree a compensation for the correlate.

I have to return my thanks for the very kind assistance rendered to this work by Colonel Sir Henry Jomes, R.E., F.R.S., and Captain Helsham Jones, R.E., to school I am indebted for the success of this division of the book.

Va.	***************************************		
1		(Frontispie	cc.)
	FALL OF ICARUS, A CAUTION TO ASBONAUTS. THO' ICARUS FALLS, THE DEDALUS PLIES.		
10			
16		Facing page	2
	THE ARGONAUTS. [Nos. 1, 1a, 1b, 1c, 30s are from Picano's Illustrations in the 'TE	MPLE OF THE	
	Mcses, 1730 a.o.]		
	Quorum simul alba Nantis		
	Stella refolait,		
	Defluit saxis agitatus humor,		
	Concident venti, foginetque cubes,		
	Et minax (quod sig voluere) ponto		
	Unda recumbit,Horat, 1, Carm. Od. 12.		
18		Facing page	16
	BELLEBOPHON PROFES THE CRUMPRA.	I demy Inge	
	Τύρ μέν Πόγρασδ είλε, απὶ έσθλός Βελλεροφόστης.		
Ιe		Facing page	10
	PRAETON STRUCK ROWN BY JUPPTER'S TRUNDER.		
	Intonat, et dextrà libratum fulmen ab aure		
	Misit in auricam; peritarque enimaque retisone		
	Exuit, et sevia compescuit ignibus ignes.—Grid, Met. 2.		
		Facing page	28
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	Homo Volans; xxxixth illustration in the work, Machine Nove, Fausti Verantii		
	declaratione. Latina, Italica, Hispanica, Gallica, et Germanica (Venetiis) (Consansir, 16	95, in MS.)	
	Homme volant avacq un voile quarre estenda avecq quattre perches egalle et av	ant attache	

quattre cords aux quattres colege, un bomme sans danger se pourra igtter du haut d'uoe tour, ou de quelque aultre lien eminent: Car encores que alheura il naye pas de vent, l'effort de celuy qui tombera, a portera da vent, qui retiendra la voile, de peur qu'il ne tombe violement, mais petit à petit descende; l'homme doncq se doiht mesurer avecq la grandenr de la voile.

Facing pays BARCILONA, 1678. It was copied by the same artist and at the same time as the foregoing, but the reference having been lost, the original, which is certainly in the British Museum, cannot now be found. 44

Facing page REPRESENTATION OF the AIR BALLOON OF M. MORTCOLFIER, in the FIELD OF MAIN BOAY PARIS. This Balloon of 38 feet in Circumference, made of Taffeta covered with Elastic Gum and filled with Inflammable Air drawn from Iron by means of Vitriolic Acid, rose of itself, the 27th August, 1783, at 5 o'clock in the evening, in Presence of more than 300,000 People.

Facing page GENERAL ALARM of the INHARITANTS of Gonesse, occasioned by the Fall of the Air Balloon of Mr. Montgolfer.

The Balloon previously described rose in heavy rain above the clouds; "It is presumed that it was carried to the height of more than 20,000 feet, when it burst by the reaction of the Inflammable Gas upon the Atmospheric Air; it fell at three-quarters past five near Gonesse, 10 miles from the Champ de Mars. The affrighted inhabitants ran together, and two Monks having assured them it was the skin of a Monstrons Animal, they attacked it with stones, pitch-forks, and flails, the Curate of the Village was obliged to attend in order to remove the fears of his astonished Parishioners. At last they tied to the Tail of a Horse the finest Instrument that was ever made for an Experiment in Natural Philosophy, and trailed it across the fields more than 6000 feet."

No.

A MONHEUR DE FAULAS DE ST. FOND, DE PLUSIQUES ACADÉMIES

Expérience Aérostatique faite à Versailles le 19 Septembre, 1783, eu présence de leurs Majestés, de la Famille Royale, et de plus de 130 mille spectateurs, par Mesers. de Montgolfier, avec un Ballon

de 37 pieds de hauseur, sur 41 de diamètre.

Cotte superbe machine a fond d'azur, avec le chiffre du Roi et divers ernements en couleur d'or, déplagoit 37,590 piede cubes d'air atmosphérique, pesant 3192 livres, mais la vapeur dont on la remplissoit, pesant moitié moins que l'air commun, il restoit une rupture déquilibre de 1596 livres sur quoi la machine et la cage eù étoit un monton, un coq et un canard, pesant ensemble 900, et co poid devant être sonstruit, le Ballon auroit pu enlever encore 696 livres. A une heure un coup de canon annonça qu'ou alloit remplir la machine; onne minutes àpuès, un second coup apprit quelle étoit ploine, et un troisième qu'elle alloit partir; elle s'éleva alors majestuousement à une grande hanteur, à la surprise des spectateurs et au bruit des acclamations publics. Elle se soutient quelque tems en équilibre et descendit lentement huit minutes aurès. À 1700 toises de distance du point de son départ, dans le bois de Vancresson, Carrefour Maréchal; le meuten, le coq, et le canard n'éprouvérent pas la plus légère incommodité.

ILLUSTRATIONS OF THE SAME EXPERIMENT IN THE EUROPEAN MAGAZINE.

Facing page Facing page 104

Facing page

EXPÉRIENCE DE LA MACHINE AÉRONIATIQUE DE M. MONTGOLFIAR, AU CHÂTIAU DE LA MUETTE, LE

21 NOVEMBRE, 1783. Le Ciel étoil couvert en partie de nuages; à midi 8 min, on a annoncé en tirant une boête, ou'en alloit remplir la Machine; 8 min. après, elle étoit prête à partir; M. le Marquie d'Arlandes et M. Pilatre de Rozier se sont mis dans la galerie. On l'a d'abord laissé enlever par forme d'essai, en la sontenant avec des cordes, mais s'étant dirigée sur une des allées du Jardin, elle a sonffert plusieura déchirures qui out été réparées en moins de 2 houres. A 1 heure 54 min, elle est partie, portant les mimos personnes; étant environ 250 pieds de haut, ces MM, out salué les spectateurs en baissant le chancau. Ce epoctacle était majestueux et attendrissant; la machine a monté à trois mille pieds cavirons. Tout Paris a pu la voir traversant la Seine et passant entre l'École Militaire et les Invalides; les voyageurs voulant borner leur course, ont laissé descendre la machine, mais le vent les dirigeant sur les maisons de la rue de Sèvres, Faub, St. Germ., ils se sont relevés pour traverser Parie; ensuite ils sont descendu tranquillement dans la campagne du nouveau Boulevard. En 25 minutos ils ont parcouru 2 lienes sans éprouver ancune incommodité. La mochine a 70 pieds de hant, 46 de diamétre, contenant 6000 pieds enbes; ello est de toile de coton grannée; le poids

qu'elle a enlevé est de 1700. PRANCOIS PILÂTRE DE ROGUER.

Facing page 116

President of the Museum established at Paris in 1781 under the Patronage of Monsieur and Madame: Inspector of the Cabinet of Physick, Chymistry, and Natural History of Monsieur; Secretary of the Cabinets of Madamo; Pensioner of the King; Member of several National and Foreign Academies, and an honorary Member of the Thornville or Balloon Club of London. From an Original Picture in the possession of Colonel Thornton (being the only Portrait be would over permit to be painted) by whose desire it is engraved, to perpetuate the memory of that great man. François Pilâtre de Rozier, the Fisst Alboxaut, was born at Metz on the 30th March, 1756. In 1782 he performed the experiment described in the Picture of impiring and expiring inflammable air before the Royal Family at Paris, and repeated the same experiment in London on May 27th, 1785, before the Members of the Balloon Club. On the 14th of June, 1785, M. Pilitre de Rezier, accompanied by M. de Romain, ascended with his Ballcon from Boulogne with an intention to cross the Channel to England. At an elevation of 3600 feet the inflammable air took fire and exploded the Balloon, which descended with such an accelerated velocity as to crush the imfortunate adventurers.

Paring pope 126

Gross Atmoratraget, debié à Monsierr Charles.

Cutte machine est representé lei éllevant pour la seconde fais au millieu de la Prairie de Node, ou il vesoit de decembra, accumpagné de M. Robert et en présence de Mgr. le Due de Chartres, M. le Due de Pitstannes, et de Marre, Gestilloman Angleis. M. Bobret présente le Trocs-

Verbal à signer aux Curas d'Hédouville et de Nesle.

Facing page

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14

M. Charlos, Professor of Natural Princophy.

THE EXTERPEDING LENARIO'S GRAND AND BALLOUN.

Facing page 172
Vincent Lonards, Secretary to the late Neapolitan Ambassador, First Armal Translille in
England, an Homorary Member of the Homomable Artillery Company of the City of London, and

England, an Honorary Member of the Hononrable Artillory Cempany of the City of Londou, and Royal Archer of Scotland.

Facing page 184

EXPÉRIENCE Afnorrarique fisito à Lyon le 19 Janvier, 1781, à midi 48 minutes, nvec un Ballon de 100 pôsis de diamétes, sur 118; do hant îl s'est élové à le hanteur de 1400 Toises, et n été vu de 12 lieuse à la ronde; et il a fait l'islimination de tous les spectateurs. Il n desceedu dans une prairie, pes éloigné de son départ.

Losque, d'un front majesteeux Qu'echedissois la modestie, Mosroonanne s'eleva poès de séjour des Doeux, Il approchoit de sa patrie.

Voyageum Aviens ...M. Montgolffer, inventour; M. Filastre du Rosier; Le Prince Charles, file du Frince de Ligne; M. 16 Conato d'Anglefort, Lieut. Col. d'Unf., Chevalier de S. Leuis; M. le Conato de Daupière, Diffeier aux Gerdes de Conato de Daupière, Diffeier aux Gerdes

Français M. Fontaine, conferateur zelé.

Ficing page 195

Nacunxt Afaortation de cent vinet pieds de hanteur sur cont de dissactre, construite à Lirou,

avec une concluye farmie par trais papires ente deux caneras, et un flet qui everlageis le bus en trenteil la glicite; un les suffereils du reprisente diverses appires. Cette machine, fullo was la direction de N. du Mentgoliter Panie cu verta d'une Souneriplem, évez férez le 10 Jenvier, 1741, i direction de N. du Mentgoliter Panie cu verta d'une Souneriplem, évez férez le 10 Jenvier, 1741, i de limite, N. La Prince Charles De Lign, M. le Conte de la Petre d'Ampleire, d'

La Nortzar Jun sen Ballonos Afloreraptora à Creator une Zerures fazeté.
Condécimien.—Co Jun, commo celni du Julis, valucito avre deux de et les jettems, du prix desquals en convient: on est met charens huit un le No. 1, avant de commencer la partie; que l'en paye
en que l'en reçeit suivant les règles inacrites au has de chaque cas, et si l'on excède le nombre 13,
en retregnalmen d'autont de pointer.

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	TOUR DE CALAIS.	
	Nouvelle Machine Aérostatique construite par Mr. Romain, par ordre du Gouvernement, destinée à faire le passage de France en Angleterre, conjointment avec M. Pilâtre de Rozier.	
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	on the spot.	
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	THE VILLAGE OF SEAL, NEAR SEVENDARS, KENT, where, on the 23rd August, 1825, et 6 P.M.,	
	M. P. Comman established the principle of sailing in an horizontal direction at any required point	
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	A Balloox View of the Densy in 1846.	
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	ACCOSTATION OUT AT ELBOWR; OR, THE ITEMERANT ACCOUNT.	
	Behold a hero, comely, tall, and fair!	
	His only food phlogisticated air!	
	Now on the wings of mighty winds he rides! Now torn thee' hedges!—dash'd in ocean's tides!	
	Now drooping roams about from town to town, Collecting pence t' inflate his poor balloon;	
	Pity the wight, and something to him give,	
27	To purchase gas to keep his frame alive.	44.0
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	piece to the 1st edit. of the 'Encyclopedia Britannica.']	
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	ATLAS SUPPORTING THE HEAVENS ON HIS SHOULDERS,	
	. Levaçor a parte Meduse  [pae retro versus aqualentia produkt ora.	
	Quantus érat, mons factus Atlas.	
	Et omne	

Orid. Met. 4.

# PORTRAITS.

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	<ol> <li>M. Le Manquis D'Arlandea. Premier Navigateur Aërien.</li> </ol>	
	2. Due de Chartes, father of "Louis Philippe."	
	3. M. Garvenix, the Pirst to descend in a Parachute. This sketch was drawn by Edward Hawke	
	Locker, on an aerial voyage in 1802.	
	<ol> <li>Dr. Jefferies, an American who accompassed Blanchard in the first voyage across the Channel.</li> </ol>	
32	Facing page	462
	8. Jazz Piczan Baccanan. The first Arrizi Meiove. Olizan of Claids, and Pennieser of the French King, bern at Andrij in Sermanijy, the 4th July 1755. In his exist Acad Vergare he crossed the Straits between Deven and Claids; he left Dover Coatle on the 7th January, where a Pyramid Is creeded to his Honors, and the place by the King's order to to be called "The Casten of Blanchand." hence, and the place by the King's order to to be called "The Casten of Blanchand." 7. Men Casten, The investor of the Gos Balloon. 7. Men Honories, who look this life at Lee in Kent, by descending with his Parachuse from the Nassen Balloon, 24th July 1872.	
33	Facing page	462
	9. Timerius Cavalao, F.R.S., Author of the "History of Aerostation in 1785."	
	<ol> <li>Mss. Sacs, the first English lady who made an aeriel voyage.</li> </ol>	
	<ol> <li>CRARLES GREEN (who made 526 ascents without any serious accident, and is still living, aged 84 years).</li> </ol>	
	<ol> <li>Rowane Spencer (who made many escents with Mr. Green, and was with him on the occasion of Mr. Cocking's parachate experiment).</li> </ol>	
31	Facing page	462
	13. To the Right Honourable the Chancellor, the Rov. the Vice-Chancellor, the Rev. the Proctors, the Rev. the Heads of Colleges and Halls, with their respective Societies, this Engraving of Mn. Saura (the first English aeronaut) is respectfully dedicated, etc., by James Roberts. Oxford, 175.	
	14. The two Monrostrees. Inventors of the Balloon.	
	15. James Glaisher, Esq., F.R.S., the meteorologist.	
	<ol> <li>HENRY COUWELL, Esq. (who has made 330 ascents).</li> </ol>	
35	Facing page	462
F	your left to right.	
	1. Walter Pridzaux, Esq.	
	2. — Hollins, Esq., R.A.	
	3. W. M. Janes, Eq.	
	4. ROBERT HOLLAND, Esq., M.P.	
	5. Monce Mason, Esq. The Nassau Porty in 1836.	
	6. Charles Green, Esq.	
	· · · · · · · · · · · · · · · · · · ·	

# VIGNETTES.

The photograph is from a sepia drawing, copied from	CHAPTER VII.
a wood engraving executed by Dalziel and designed	
by Mr. John Linton Dedication	
Xo.	
I. Juniter Tonana. Antique Greek gem in a calcinct at	25. Godard's Monte-difere, L'Arcle
Turin, original size, from the Worsley come Title	9º 25. The Initial Letter A-beat with Japanese Flag
Farm, original rate, from the recently grain Fire-	
	28. The Fish-Balloon
CHAPTER I.	est.
2. The Early Britons' Cornele	3 CHAPTER VIII.
	29. The Eagle and Child
CHAPTER II.	3), French War-Balloon, 1794
	31, American War-Palloon, 1802-4
3. Sculpture	5 . 32. "Fil put a girdle round about the earth in forty
4. Painting	6 minutes exit Puck
5. Architecture	6
6. The Ethereal Plain	8 CHAPTER IX.
7. Aurora	12 33. A group of Experiments
8. Astelpho and St. John	8 34 The interior of the Nantilon-shell
9. Surrories	27 35, Mons. Nadar's Ideas
10. Kai Kacoa, King of Persia	31 36, More, de la Landello's Ideas.
11. Mons. Bosnier.	12 37. M. David's Sailing Aerostat
12. Jesuit Father Lana's Proposition	54 S8, M, David's mechanically propelled Argustat
13. The Portuguese Experiment	15 No. M. Desero's Bath
14. The Art of Flying Burlesqued (from an old print)	Спартия Х.
CHAPTER III.	40, The Flying Fish and Nautili
15. Initial Letter A	41. Wild Ducks and Tortone
16. "Cadera ipeara pelimus stoltitiā"	CHAPTER XI.
au - Carona speace permits stortick	
	42. The Morning Dew
CHAPTER IV.	43, "Obstantes findst pebulas"
17. Elves and Thistle-Down	
It Erres and Talette-Down	CHAPTER XIL.
	45. Earth, water, air, fire
CHAPTER V.	46. A Glimper of the Future
18. Jacob's Dreson	8 47. The Angel and Child 4
	48. Pepares Volunt 4
CHAPTER VI.	APPENDIE.
19. Night Voyage to Namen	49. Pheyses and Helle
50, Parachutes	
21. The Coal Strata	7 51. Lux ontur 4

H is a very planning duty to acknowledge my obligations for the designs of some of the Vignettes that illustrate this volume, to my friends, Min Johns, Caylain Archer, 60th Bifels, and Charles Fairfield, of P. C. O. Rife Brigade. Not. 3, 4, 5, and 47, are the mell-known designs of Kaulkoch.

No. 18 is also a German design, by Bol.

Money, Daliel engraved the larger half, and the others were executed by Mr. Whymper, Mr. Pearson, Mr. Pethersick, and M. Duncott, of Paris.

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#### CORRIGENDA.

Page 85 of Chapter IV., besiding, for Louis Boommarte, read Lucieu Buommarte. 75, last time but 5, for Roberts road Robert. 89, heading, for ROZHER read ROZHER. aracing, per BOATRE read ROZICE.
 under woodent, for Garnaria read Garnetia
 last line but 3, for Elected read Ellected.
 line 27, for Mont Viso read Monte Viso. 120. Lead to the late of the Fattern or an artist of the late of . 303., line 6, for reversion read rivietnoc.

i line 22, for noon made a tent, for, read a learn.

394, line 6, for allocator read stateous,

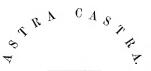
ine 6, for allocator read stateous,

ine 7, for no direct its read me directiine 28, for colat read exclat.
in line 37, for everiatil read exclat-il.
442, line 12, for strangeres read strangere. , 459,-Year 1824, for Dupuis Delcourt read Depuis-Delcourt. 460.—Yaz 1844, for Depish bleases read Depish-Deboust.
161.—Test 1955, for Ceptain Curries and Curry.
461.—Test 1955, for Ceptain Curries and Green.
462.—Yaz 1955, for Ceptain Curries and Green.
463.—Yaz 1955, for Captain Curries and Green.
463.—Yaz 1954. (Chemistr). Lim. I<sub>1</sub> for Analysis read Analysis, and Captain Curries, and Captain Currie

# EXPLICANDA.

Year 1863. (Dr. Pierre Moreaud). Line 2, for Aerostat road Aerostate.

Page 23.—The M. Rozier here mentioned and M. Pilitre de Rozier, whose name recurs so often, were different individuals. .... 110.—Necoleon here mentioned is Naroleon L.



# CHAPTER I.

#### THE DAWN OF NAVIGATION COMPARED WITH THE DAWN OF AEROSTATION.

See him from Nature rising dose to art!
To copy instinct them was reason's part:
Thus then to man the veice of Nature spake—
(in, from the creatures thy instructions take:
Learn of the little Nautilos to sail,

Speed the this our, not anoth the during nic.—Pere.

From the Bible we learn that the directions for building the first vossel were given by God himself. Much of the ridicule that Noah had to bear may perhaps have arisen from the complete novelty of his attempt.

David in the ceil, Pada, and other passages, refers to this subject; but as the Appertyple is less read, I will here give some verse from the book of the Wiston of Solonea, which appear to me to express the same dread of the water that we now have of the air. The impried author wheshed no dreat attention to the fully of workshipping ideals, and, in comparison, he speaks of slips, which are also the work of man's hands, and by which he is much more likely to be swed than by carved linguages:—

Chap. xiv. 1 to 5.—1. Again, one prepareth himself to sail, and about to pass through the raging wavecalleds upon a piece of wood more rotten than the vessel that carrieth him :

For verily desire of gain deviseth that, and the workman built it by his skill.
 But thy providence, O Father, governeith it: for thou hast made a way in the sea, and a safe path in the wayes—

4. Showing that then cause save from all danger; yes, though a non-next to sea without art.
5. Nevertheless thou wouldest not that the works of they wisdom should be idle, and therefore do mentit their lives to a most piece of most, and passing through the rough sen in a weak cased are sent.

The classic poets impute the origin of navigation to Bacchus or Neptune; and Pindar thus speaks of the 'Argo:'—

Tir di magnestij physir factionour mides y' Indeser Hon Νούς Αργούς μη τινα λεοπόμενο Τάν δείνδονον παρά ματρί μέναυ Alien gierow', dhà' igi nei feniru Φάρμακον κάλλιστον έδη δρετός "Alifur expension our dalan. Er & looksie erei Karida marin Autoc. Aifaro misras émurieros lintur, pel dá si Μέστες δροέχεστε καὶ κλάpour beorgenius is prin Modes Sudane experie Spodowe erel & epilibe Κρίμασον άγεθρας δπερθεν λουσέον χειρεσσι λαβών φιόλου Appès és noium nurio Copardir Exycuriosper Ziec, sal depresony Kapatrus ferris dripus e' exiles, Niscres ve, nel misvoy nekridost, "Αμιστά τ' εξήροσα, ποί Φιλίον πίστου μούραν. Ex retion & of daydivine Basseries elleres Odiyaa haanpal d' fhise seri ит отвроий вигоруунциясь. Aureoir & Source !eracar bui eigae

Bebineres, nigrot & nivole

4ve Pyrrian, 327th line.

Primus.

Great Juno waked the sweet desire Which hade the demigods aspen With Arco o'er the deep to roam; That fixed in his maternal home Remote from peril none should stay, And wear his laccard are away. But share his fellow heroes' toll Death's fairest antidote, the spoil. Soon as to proud lolens' town Came the bright flower of seamen down, Jason extell'd with praises due, And number'd all the valuat crew Skill'd in each bird that cleaves the sky, And enered lots of augury, Mopsus enjoin'd the host their sai To spread before the favouring gale, But when they hand'd upon the prow Their suchors o'er the deep below Fix'd at the stern, the chief displays His sucred phint's colden blaze. Invoking heaven's great father Jove, Who wields his lightning spear above; Waves that o'er ocesa's bosom play, And breezes' every-varying way, Calsu mights and days his prayers increore. And sweet return, their wasderings o'er. Propitions thunder's awful sound Heaven's favouring answer quickly spoke, And lightning's forked darts around From all the clouds irradiste broke. Elated at the prosperous sign, The heroes glow with joy divine. The augur issued his command To ply their ones with countains force.

To ply their oass with constant force, Suggesting to the valiant band. Sweet hopes to cheer them on their course, Quick gaining with the breezy mouth. Th' inhospitable occuri's mouth, There to the god a shrine they rour, Who sways the raging said curver.

-Wheelwhight's Treas

Horace also says :-

Illi robur et as triplex Circa ¡ectus enst; qui fragilera traci Commisis pelago ratem

The classic historians ascribe the discovery to the Phœnicians, or to the inhabitants of the "Ultima Thule, Britannica," whose coracle, like the one here represented, is still to be found on the coast of Donegal.

Each alteration has progressed with slow and painful steps\* in this science, from these

J-bin Charned, F.S.A., in his History of Musica Architecture, 18th, diside the improvements in this schore into servat nephrat— "The Oth commences with the investion of the number's companrate and the commences with the presenting of the 16th contrap, in a 12th, and contrasts will be beginning of the 16th contrap, in tegsther with the contrinsics of perfacious, gave light to the 7th and interpolarly attacking to resemit done requiries and properties, which though imperficiely empired and provided for in the logistic region, law, by property personal and contract agreement, pushfully long laws, by property precise and contract agreement, pushfully

improved into that excellence, and almost unimprovable state of perfection, which the ships built at the present day are by some supposed to possess."

In the Cotton 3198, are the heads of an intended publication on this subject in Vis Walter Habi-gib benderiting. For a deviation of the importainfallity of applying steam to nation anxigation, see Dr. Laudner's Calciust Cyrlopadia's Hydrostation, chap. L. I quote this is a future chapter.



The Duscurs or Caster and Pollux the Guardians of Mariners

rough shells of boats to the highly-finished, swift, and powerful vessels that we now

Yet the difficulties at the commencement of Aerostation were plainly far greater; for whereas man had wood at hand that floated or water, he had to seek for means whereby to rise in the unseen ocean with which he is surrounded.

It took centuries of experiments, assisted by many accidental discoveries, to find out the properties of air.

The victory obtained as yet, has been only the power of visiting the atmosphere; but to mater its currents, and guide one's self through them, is reserved for this or some succeeding generation.

We may hope from the present rapid means of communication, that the combined labours of many may effect in a few years improvements in Aerostation as marked as those which have been secured to marine navigation after a lapse of centuries.

Our hopes are further strengthened by the incredible progress made within a short period from the first steamer launched on the Ctyde, to our beautiful fleets that now visit all the harbours of the world.



THE COLACER OF THE BETTOOK

Biot Cipe at critine to \$146.

# CHAPTER IL

# ANABAGEN: OR, THE "NORMAL CLAIRVOTANCE" OF POETS IMAGINATION: AND THE EXPERIMENTS PRECEDING 1980.

Thought suggests experiment, experiment ministers fresh materials to thought.

—Sm HENST HOLLAND, Edinburch Review

PROBET AND SCINCK — GARDEN — THE " DESCRIPT, PLANT ——PROBET AND SCINCE —ARROHM, THE ENGLISH AND SCINCE —ARROHM, THE SCINCE OF THE SAME — THE ARROW AND ARROW

BUCKLE, in his 'History of Civilisation,' makes the following remarks on the consequences of divorcing poetry from science:—

In England, especially, there is, among physical inquirers, an arowed determination to separate philosophy from poetry, and to look upon them, not only as different, but as bestile. Among that class of thinkers, whose zeal and ability are beyond all praise, and to whom we owe most unbounded obligations, there does undoubtedly exist a very strong opinion, that, in their own pursuit, the imagination is extremely dangerous, as leading to speculations, of which the basis is not yet assured, and generating a desire to catch too eagerly at distant glimpses before the intermediate ground has been traversed. That the imagination has this tendency is undeniable. But they who object to it on this account, and who would, therefore, divorce poetry from philosophy, have, I apprehend, taken a too limited view of the functions of the human mind, and of the manner in which truth is obtained. There is, in poetry, a divine and prophetic power, and an insight into the turn and aspect of things, which, if properly used, would make it the ally of science instead of the enemy. By the poet, nature is contemplated on the side of the emotions; by the man of science, on the side of the understanding. But the emotions are as much a part of us as the understanding; they are as truthful; they are as likely to be right, Though their view is different, it is not capricious. They obey fixed laws; they follow an orderly and uniform course; they run in sequences; they have their logic and method of inference. Poetry, therefore, is a part of philosophy, simply because the emotions are a part of the mind. If the man of science despises their teaching, so much the worse for him. He has only half his weapons; his arsenal is unfilled. Conquests, indeed, he may make, because his native strength may commensate for the defects of his equipment. But his success would be more complete and more rapid, if he were properly furnished and made ready for the battle. And I cannot but regard as the worst intellectual symptom of this great country, what I must venture to call the imperfect education of physical philosophors, as exhibited both in their writings and in their trains of thought. This is the more serious, because they, as a body, form the most important class in England, whether we look at their ability, or at the benefits we have received from them, or at the inflorace they are exercising, and are likely to exercise, over the progress of society. It cannot, however, be concealed, that they display an ignorant respect for experiments, an andre love for minute detail, and a disposition to overrate the inventors of new instruments, and the discoverers of new bot almost insignificant facts. Their producessors of the seventeenth century, by using hypotheses more boldly, and by indulging their imagination more frequently, did certainly effect greater things, in comparison with the then state of knowledge, than our contemporaries, with much superior resources, have been able to achieve. The magnificant generalisations of Newton and Harvey could never have been completed in an age absorbed in one invarying round of experiments and observations. We are in that predicament, that our facts have outstripped our knowledge, and are now ensumbering its march. The publications of our soleutific institutions, and of our scientific authors, overflow with minute and countless details, which peoplex the judgment, and which no memory can retain. In vain do we demand that they should be generalised and reduced into order. Instead of that, the heap continues to swell. We want ideas, and we got more facts. We hear constantly of what nature is doing, but we rerely hear of what man is thinking. Owing to the indefatigable industry of this and the preceding century, we are in prosession of a hugo and incoherent mass of observations, which have been stored up with great care, but which, until they are connected by some presiding idea, will be

utiefy useles. The most effective way of tuning them to account, would be to give more scope to the imagination, and source into prior of provide the gird of gives. If the innea our philosophes would double helr reconstruct, instead of working, as now, mainted, with only helf their nature. They fare the imagination, on ascense of its instance; for finance tyricome. But early all our finestianes are needed in the permit of treat, and we cannot be junction in discretelling any part of the immun mind. And I can heally doubt that one of the reconnect by we, in Eugland, make near wherested inducerous entiring the everenteent curvary, and keans that reconnected way to be a support of the property of the contraction way. I believe, no remain of managing civit. Subjecture and the perior second the need, which revert and the philosophere regard.

This idealism has been further extolled by the powerful pen of Schiller, that gave birth to the beautiful designs of Kaullach, of which the following are engravings. They remind na how the ideas of omnipresence and of aspiration naturally associate themselves with the atmosphere.



SCHITTAK

Die von dem Then, dezo Stein bescheiden aufgestiegen, Die schönferische kunst, umsehlieszt mit stillen Siegen Des Grintes unormenmen Brich. Was in des Wissens Land Entdecker nur ernegen, Entdecken sie, ersiegen sie für epch. Der Schätze, die der Denker aufgehänfet, Wird er in euren Armen erst sich freun, Wean seine Wissenschaft, der Schönheit augerrifet, Zum Kunstwerk wird gendelt soyn-Wenn er auf einen Hügel mit euch steige Und seinem Auge sich, in mildem Abendschein, Das maletische Thal-auf einzud zeiget. Je reicher ihr den schnellen Blick verzuuget. Je höhre, schöure Ordnungen der Geist In einem Zauberbund darchflieget, In einem schwelpenden Gennez umkreist: Ja weiter sich Gedanken und Getüble Dem uprégeren Harmonienspiele, Dem reichern Strom der Schönheit aufgetban-Je schunge Glieder gas dem Weltenplan, Die jetzt verftummelt seine Schöpfung schänden, Sicht er die hohen Formen dans vollenden, Je schoore Bäthsel treten aus der Nacht. Je reicher wird die Welt, die er nmechlieuret Je breiter strömt das Meer, mit dem er flieszet, Je schwächer wird des Schickenla blinde Macht, Jg höher streben seine Triebe, Je kleiner wird er seibst, je grüszer seine Liebe.

If Art rose plastic from the atone and clay, To Mind from Matter ever sweeps its away; Silent, but conspering in its ailence, lo. How o'er the Spiritual World its triumphs go! What in the Land of Knowledge, wide and far, Keen Science tracks-for you discovered are: First in your arms the wise their wisdom learn-They dig the mine you teach them to discern; And when that wisdom ripens to the flower And crowning time of Beauty-to the Power From whence it rose, new stores it must impart. The toils of Science swell the Wealth of Art. When to one height the Sage ascends with you, As appends the vals of matter round his view In the mild twilight of serve repose;--The more the Artist charms, the more the Thinker knows. The more the shapes, in intellectual joy, Link'd by the Genii which your spells emp The more the thought with the emotion blends-The more up-buoyed by both the Soul necond-To loftier Harmonies, and heavenlier things, And tracks the stream of Bewaty to its springs. The lovely members of the mighty whole, Till then confused and shaneless to his soul. Distinct and glorious grow upon his night, The fair enigmas brighten from the Night, More rich the Universe his thoughts enclose-More wide the Ocean with whose wave he flows; The wrath of Fate grows feeblar to his fea-An from God's Scheme Chance wares and disappears; And as each straining impulse sours above-How his peide lessens-how sugments his love!



PAINTING.

He m the custow of Toughil, now harrier-fore, Steweyer the glid asset of bell Philosophy; And with self-posme, and a vain renown; Would claim the prises and surveyar the cowar, Holding has a soldier in her band, and a constraint of the self-posme, and a vain relative to the band, and posme, becoming the visitoring where, To Art, her Queen—the share's first rank show; Prabas the vaund—they was, Prabas the vaund—they was, Prabas the vaund—there of the Spring, began waven in one bright occount! With you, the first through the cound the Markon, and the state of the Spring, began water in the state of the Spring, began water in the state of the Spring, began water in the state of the Spring the state of the Spring the Spr



ARCHITECTURE.

No faller him, in verbergenen Louf, Durch immer reiere Fronce, reime Tone, Durch immer behare Bilden und immer actioner Schoine Der Dichtung Blümenleiter still himsuf— Zolletzt, am erfelt Geld err Zeiten, Noch eine gluckliche Hegeinterung, Der jangstem Menchentlarten Dicherschwung, Und—in der Wahrheit Arme wird er gleiten.
——CUMARA. So, asstraing blooms, the still Guide, Postry Lords high they paths, the bid, that mount on high—Lords high they paths, the bid, that mount on high—They forms and tones more pure and more unbline—Ale pure Al pel Beauty—till the time.
When what we long in Postry have sents, Still as a 1615 a will inspirately be still as a 1615 a will inspirately be and they have been also be

Not having been able to obtain Poetry when desired, I have been obliged to substitute Architecture, a design by the same artist.

OLYMPUS.

חרבב עליברוב רופה חרא עליבנפי רוח

-Page Xviii, 11 Hebrew Bible, var. 10 in English Bible.

On Cherobian and Nemphian Full royally he rode, And on the wings of finning winds Came fixing all abroad.

-Paalm XVIII., Sternhold and Blocking's Metrical Version,

Nothing can surpass the grandeur of this, even if compared with other passages of David's inspired writing. But let us dessend to the loftiest fancy of the classic poets, and hear Homer in one of his descriptive scenes, that throw such beauty on the glowing mythology of Greece (*Ilbial*, Book Y. 925th line) :—

Swift at the source, the ethereal coursers fiy, While the smooth chariot cuts the liquid sky, Heaven's gates spontaneous open to the powers, Heaven's golden gates, kept by the winged Hours; Commission'd in alternate watch they stund, The sun's bright portals and the skies command, Involve in clouds the eternal gates of day, Or the dark barrier roll with case away, The sounding binges ring: on either aids The gloomy volumes, pierced with light, divide. The chariot mounts, where deep in ambient skies, Confused, Olympus' hundred heads arise; Where iar spart the Thunderer fills his throne; O'er all the gods superior and alone. There with her snown hand the ourse restrains The fiery steeds, and thus to Jove complains; . .

To whom assenting, thus the Thunderer said:

"Go ! and the great Minerva be thy aid;

To tame the measter-god Minerva knows, And oft officts his brutal breast with woes," He said : Naturals, ardeat to obey, Lash'd her white steeds along the serial way Swift down the steep of Henrey the chariot rolls. Between the expanded earth and starry poles. Far as a shopherd, from some point on high, O'er the wide main extends his boundless eye : Through such a space of sir, with thraviting sound At every leap, the immortal coursers bound Troy now they reach'd, and touch'd those banks divin-Where silver Signess and Scamander join. There June stopp'd, and her fair steeds unlessed, Of sir condensed a vapour circumfused; For those, impregnate with celestial dew, On Simon brink ambersial berbage grew. Theore to relieve the fainting Arrive throne. Smooth as the sailing doves they glide along.-Pore,

Oh that I could as smoke arise,

That rells its black wreaths through the sir;
Mix with the clouds, that o'er the skies
Show their light forms, and disappear;
Or like the dust be toodd

By ev'ry sportive wind, till all be lost!

— Escurates, The Suppliess's Cherns, 806th line.

And again (824th line):-

Oh might I sit sublime in air, Where watery clouds the freezing snows prepare!

Again, in Pindar, who thus expresses the idea that pervades the Greek mythology (14th Olympiad, 14th line). It may be translated according to an old version:—

> άλλα πάντων Τομίου Γργων έν οδρανή Χρισύτοξον δέμαναι Παρά πέδου Ταπόλιωνα δρώσοις, "Ανκοιν σύβουνα πατρός "Ολυμπισου τυμάν.

Ever on the othereal plain In harmonious measures move The celestial choirs above,



THE ETHERRAL PLANS

An Italian painter of the fifteenth or sixteenth century, has well expressed this with his pencil, which the engraving here represents,

Euripides, also, in the Iphigenia:-

Vagarpin irmidipagan flaige, Test eldham fagtran miga Oleram el forti blikagan Brigaryas én miras dipide Aifagan buijawas Eigentöve, Teleprosas iş in Tangası, 1140. Oh! might I inavel through you hard road,
Where rolls the charics of the fiery God;
Might I through thi impassive air
My answeated course pursue!
Till, distinguished from afar,
My dear country rose to view:
Then quick descending from my airy beight,
My pisions would I close, and stay my flight.

Enough having been given of the mind of Greece, let us turn to that of Rome, and take first Ovid's description of Phaeton :—

# STORY OF PHAETON.-TRANSLATED BY ADDISON.

Interes volucres Pyroeis, Eaus, et "Ethon, Solis equi, quartusque Phlegon, himpitibus auras Flammiferis implent, pedibusque requents pulsant. One postquam Tethys, fatorum iemara penotis, Reppalit, et facta est immensi copis mundi; Corripaere viana, pedibusque per nera motis Obstantes findant pebulas, pennasque levati Preterenat ectos Isdem de partileas Euros. Sed leve pondus erst, nec quod cognoscere possent Solis equi : sobtaque jugum gravitate escelat. Utque labant curve justo sine pondere naves, Perone mare, lestabiles nimis levitate, ferentor : Sie ouere assueto vactios dat in nera raltus, Succutitarque alte, similisque est curros insui Quod simul ac sensers, rount, tritumque relinquant Ipse pavet; nor que commissas ficciat habenes, Nec seit, qua sit iter : use, si scist, imperet illis. Tum primum radiu gelidi caluere Triones, Et vetito frustra teutarunt sequere tinvi-Quarque polo posita est glaciali proxima Serpens, Frigore pigra prius, nec formadabilis alli, Inculait, supplicase novas fercoribas iras Te quoque turbatum memorant fugiese, Boote Quaravis tardus erus, et te tua adaustra tenobont,

Ut vero summo despexit ab enthere terms Infelix Phaethon, penitus penitusque jacentes : Palluit, et subito genus intremuere timore : Suntque oculis tenebru per tantam lumen obsetac. Et jam mallet eques nunquata tetigasse paternos: Jamque agnosso gouna piget, et valuisse regassio : Jam Meropis dici cupiena; ita fertur, ut ucta Precipiti pinus Boson, cui victa remisia Fress suns rector, quam Dis votisque reliquit. Quid ficiat? multum cell post terga relietum : Aute ornice plus est; animo metitur atrunque. Et mode, quos elli fato contingera non cat, Prosricit occasos; luterdom respicit ortes. Quidque aest irrarus, stupet : et nec from remittit. Nec retinere valet : are nomina novit equorum. Spursa quoque la vario passim miracula cerlo, Vastarmoque videt trepolus simulacia ferarum Est locus, in geminos ubi brachia concavat arcus

Scorpios, et canda flexisque utrimque lacertia Porrigit in spatiam aignorum membra duorum. Hunc puer at nigri modidan andore veneni. Vulnera curvata minitantem enepode vidit; Mentis inops, gelida formidine lora remisit. Quas postquam summum tetigere jacentia tergma, Exspetienter equi : nulloque inhibente per surse Ignote regionis cant, quaque impetus egit, Hac sine lege runnt ; altoque sub athere fixis Incureant stellis, replantque per avia curram. Et modo suroma retunt, modo per decliva, vissone Proceiplies spatio terras propiore ferratur. Inferiusque una fraternos currere Luna Admirator equos: scobustaque mabila fomant Corrigetur flammis, ut queque altissims, tellus, Fisenque agit rimas, et succis aret adoutis. Pabula conescent : cum frondibus unter arbos : Materiamque suo perebet segos arida damno. Parva queror: tuague percunt com membre urbes:

Meanwhile the restless horses neighful alond, Breathing out fire, and pawing where they stood. Tethys, not knowing what had possid, gave way, And all the waste of heaven before them lay, They spring together out, and swittly bear The flying youth through clouds and yielding au; With winey sneed putatrin the eastern wind. And leave the becezes of the moon behind. The youth was light, per could be fill the sent. Or polse the chariot with its wouted weight: But as at sea the unbalkated vessel rid Cost to and tro, the sweet of winds and tides. So in the bounding chariot, tosa'd on high, The youth is hurried headlong through the sky. Soon as the steels perceive it, they fornaka Their stated course, and leave the beaten track The routh was in a maze, nor did he know Which way to turn the reins, or where to go; Nor would the borses, had be known, obey, Then the seven stars first left Apollo's ray, And wish'd to dip in the forbilden sea, The folded serpent, next the freeon role, Stiff and benumb'd before, began to roll, And raged with inward heat, and threaten'd war, And shot a redder light from every star; Nay, and 'tis said, Bostes, two, that fain Thou wouldst have fled, though cumber'd with thy wain. The unhappy youth then, bending down his bend, Saw earth and crean far betreath him surved. His polear changed, by startled at the night, And his eves darken'd by too great a light. Now could be wish the fiery steeds untried, His birth obscure, and his request dereod; Now would be Merons for his father own. And quit his beasted kimbred to the Sun. So fares the pilot, when his ship is toroid In trembled near, and all its steerage lost : He gives her to the winds, and in despair Seeks his last refuce in the coals and prayer, What could be do? his eyes, if lackward cost, Find a long path he had already pun'd; If forward, still a longer path they find : Both be compared, and measures in his prind; And semetimes costs an eve upon the cost. And sometimes looks upon the torbidden west The horses' annes he known not in the fright; Nor would be loose the reuse, nor could be held them right. Now all the horrors of the beavens he spice, And monstrous slundows of productors size:

That, devid with ster, he centred o'er the alter. There is a pleas show, where Neoripe best in tail and arms serrounds a rast extent; in a wide circuit of the howers he shince, and fifth its space of two obstant argan. Soon and be youth held him, vert of with heat broaded he sting, and in his pations arent, the stand, and in his pations arent, and the stand, and in his pation arent, and the stand in the stand and the Cumpe suit totas populis incentia guates In eisterem vertaus. Nylve eura modulus audeus: Andet Albon, Taumajue Cilis, et Tinelius, et Uzeit. Ben unce inten, priesa moderarias incelhos, date : Bonne inten, priesa moderarias incelhos, date : Andet Albon, Taumajue Cilis, et Cilis, date : Andet in intencenum genumais iguilus i Einei. Plannamanque hisport, et City, et Cytyalas, et Chilaya, Et inalem Ilhodope nirellus cuttum, Munaque, et Marya, Et inalem Ilhodope nirellus cuttum, Munaque, et Cilis, van Kornellus, et Cilis, van Kornellus, et Cilis, van Francis, Ciloscopia cuttum de la Cilis de Cil

Acetsaque Aspec, et contrar Aprenaisment Tuno vero l'Inattico conciti e partibus erbem Adaptiri accessum, nec tantes astrate restre: Perventenque auras, velba é conce perúmila, Ore traisit, carrasque ento candionore esteti. El respoi piero cincres épectatampes faviliam Perre potest : cultique lavrolvitar sundique faron per potest : cultique lavrolvitar sundique faron. Quaque exi, aut ubi sit, piezo caligios tectus,

Nescit; et arbitrio volucrum raptarur equorum, Sanguine tran credent in corpora summa vocate, Ethiopum populos nigrum traxisse colorem. Tum facta est Libye, raptus bomoribus restu, Arida : tum Nympher passis fontesone, lacarous Deflevere comis. Querit Bussia Direct, Argos Amymones, Ephyre Picenidas undas. Nec sortita loco distantes flumina ricar Tota mancet: media Tanais femorit in undia, Pensosque senex, Teuthranteus une Cairm. Et celer Ismenos, cum Phoesico Erymantho, Armensque iterum Xauthus, flavusque Lycormas, Quique recurvatis ludit Menndros in molis; Mygdoniusque Melas, et Tuccarius Eurotas. Arnit et Euphrates Babylonius, arsit Orontes, Thermodonous citus, Gangesone, et Phays, et Ister. Æstust Alpheos: ripre Spercheides anlant; Quadque sun Tagus some vehit, finit ignibna surum. Et, our Mecnias celebrarant carmine rires, Fluminen volucres medio calorre Cayatro. Nilus in extremum fugit penerritus orbem, Occubritque capus, quod adhuc latet. Ostis septem Pulverulenta vaccat, septem sine flumine valles. Fore endem Ismanios Hebrum com Strymone signat. Hesperiosque amnes, Rhennus, Bhodsmunique, Padamque, Coique fuit rerum promissa potentia, Tibrio.

Exercity assus cital; ter nos talid seris setus.

Alima tamen Tellua, ut erad circumdata ponto,
Inter aquae polad, contractroque undique toure,
Qui se condiderant in opener wherein mattri;
Sastulti conniferen colds tenus arian valuta,
Opposalque manumi fronti: magnoque tremere
Dimala concutation punillus anhabelli, et infera,
Quana solet esse, fuit: afecuque its voce houtus cest;
8) placet box, puredque, quod ot su folimian consustri, etc.

And now above, and now below they flow,
And now the earth the burning charied dow.
The cloud dispense in funes, the wealthing moon
Behölds her betcher's steeds beneath her own:
The bigh lands annoke, clift by the pleeding ray;
Or, clad with wrooks, in their own fuel blane.
Next o're the plains, where riparal barrosis grow,
The running confluention agreeds below.
But those are trivial like whose icities burn,

But these are trivial ills; whole cities burn, And peopled kingdoms into seles turn. The mountains kindle as the car draws near; Athos and Tmolus red with fires appear; Escrian Homus (then a single name) And virgin Helicon increase the flume : Tearns and (Ete glare smid the sky ; And Ida, spite of all her fountains, dry : Erix, and Othrys, and Citheron, glow; And Blicdope, no longer clothed in snow : High Pindus, Mimos, and Parenssus, swent; And .Etna rages with redoubled heat r Ev'u Scythia, through her houry regions warm'd, to vain with all her native frost was arm'd; Cover'd with flames, the towering Appendice, And Concarus, and propd Olympus, shipe: And where the long-extended Aips aspire Now stands a huge continued range of fire, The astonish'd youth, where'er his even could turn. Beheld the universe around bim burn: The world was in a blaze; nor could be bear The sultry varours and the scorehipr air. Which from below, as from a foreace, flow'd; And now the axie-tree bruestly him glow'd. Lost in the whirling clouds that round him broke, And white with ashen, hovering in the smoke, He flow where'er the bosses drove, nor knew Whither the horses drave, or where he flew. Twas then, they say, the awarthy Moor legan To change his low, and blacken in the sun; Then Libya first, of all her moisture drain'd. Because a barren waste, a wild of send; The water-nymple issent their empty urns; Bootia, robb'd of ailver Direc, mourns; Corinth Pyrene's wasted spring bewaits: And Argos grieves whilst Amymone fails. The floods are drain'd from every distant coust: Ev'n Tanais, though fix'd in ice, was lost; Enraged Caions and Lycormas roar, And Xanthus, fated to be burnt once more: The famed Meander, that nuwearied strays Torough many windings, smokes in every mane; From his beloved Babyion Euphrates flies; The big-swoln Ganges and the Dantabe rise to thick'oing forces, and durken helf the skies ; In flames Ismenes and the Phasis roll'd, And Tayes, floating in his melted gold : The awars, that on Cayster often tried Their tuneful songs, now sung their last, and died : The frighted Nile ran off, and underground Concenl'd his head, nor one it yet be found; His seven divided currents all are dry, And where they roll'd seven gaping trenches lie: No more the Rhine or Rhone their course mountain, Nor Tiber, of his promised empire vain.

The ground, deep cleft, admits the dazeling my,

And startles Piuto with the flush of day :



Phaston struck down to Supeter's thunder.

Numme defin? lionat peritures viribus ignis, Igna perior tuo, olademque auctore levare. Vix equidens fusces here lpss in varbs recolve; (Preserat ora vapor;) tostos en adaptes crines, Inque ocolis tantum, tantam super ora faville. Home mihi fructus, bone fertilitatis honorem Officiaçue refere; quoel adunci valuera aratri, Rastrorumque fero, totoque exerçuer anno? Qood pecori frondes, alimentaque mitia fruzes Humano generi, vobis qued thura ministro? Sed tamen exitions fac ma meruisse : quid under. Quid memit frater? cor illi tradita sorte Æunora decrescent, et ab arthere lengins absunt? Quod si pre fretris, nec te mes gratis tangit; At cell miserre tul. Circumspice atrumque; Fumas aterque polue : quos si vitiaverit irmis. Atris vestra reent. Atlas en ipse laborat Vixque suis bumeris candentere metinet axeus. Si freta, si terre persunt, si recia call: In chaos antiquom confundimur. Eripe flammis, Si quid albuc superest : et rerum consela summar. Dixerat have Tolles: neque enim tolerare vaporeus Ulterius potnit, nec dicere plura : soussque Rettulit os in se, propieraçue manibus antra. At pater omnipoteus superos testatus, et lpsum, Qui dedenst currus, nisi opera ferat, onnia fato lateritura gravi; summam petit arduus arcem, Unde solet intia probes indupere terrie: Unde movet tonitrus, vibrataque fulncina jactut. Sed neque, quas posset terris inducere, nobes Tune habuit, nee, quos onlo dimitteret, imbees. Intocat : et dextra libratum folmen ab aure Minit in aurigam : pariterque animaque rotisque Expulit, et sevis compesonit ignibus ignes. Consternantur equi, at sultu in contraria facto Colla Jugo axcutiunt, abruptaque lora relinquent. Illic frena juccut, illic temone revulsos Axis; in hec radii fractarum parte rotarum : Sparsaque sont late laceri vestigia currus. At Phaethon, rutiles fismma populante espillos, Volvitur in praceps, longoque per sera tractu

Fertur; ut intenium de ocio stella sereno.

Quena procul a patria diverso maximus orbe

Excipit Eridanus, mumantinone abluit ora,

Etsi non cecidit, potnit cecidisse videri.

A.D. 43.

The seas shrink in, and to the night disclose Wide naked plains, where once their billows rose : Their rocks are all discover'd, and increase The number of the scatter'd Cyclodes; The fish in shoals about the bottom erorn: Nor longer dures the crooked dolphin less Gasping for breath the mahapen Phone die, And on the boiling wave extended lie: Nereus, and Doris with her virgin train, Seek out the last recesses of the auxin; Beneath polathomable depths they faint. And weret in their gloomy caverus pant; Stern Necture thrice above the waves upheld His face, and thrice was by the flaract repell'd. The Earth at length, on every side embraced With scabling seas, that floated through her waist, When now she felt the springs and rivers come, And crowd within the bollow of her womb, Uplifted to the Leavens her blasted head. And classid her hand upon her brows, and said (But first, impatient of the sultry beat, Sunk deeper down, and sought a cooler seat):-" If you, great kings of gods, my death approve, And I dowers it, let me die by Jorn; If I must periab by the force of fire, Let me transfu'd with thunder-bolts expire See, whilst I speak, my broath the vapours choke (For now her face lay wrace'd in clouds of smoke). See my singed hair, behold my faded eye And wither'd face, where bears of cinders lis And does the plouch for this my body tear? This the reward for all the fruits I bear. Tortured with rakes, and harass'd all the year? That herbs for eattle daily 1 renew, And food for man, and frankingense for you? But, grant me guilty, what has Neptuze done? Why are his waters holling in the Son? The wavy empire, which by lot was give Why does it waste, and farther shrink from beaven? If I nor be your jety can provoke, See your own beavens, the beavens begin to senoke? Should once the sparkles catch those bright shod w, Destruction seizes on the heavens and gods; Atlas becomes anequal to his freight, And almost faiots beneath the glowing weight If beaven, and earth, and see, together burn, All must again into their chara turn. Apply some speedy cure, pervent our fate, And suggeste Nature ere it be too late." She ceased; for, cloked with vapours round her spread, Down to the deepest shades she suck ber head Jore call'd to witness avery power above And even the god, whose son the chariot drove, That what he acts he is compell'd to do, Or universal ruin most ensue Straight be ascends the high ethereal throne, From whence he used to dart his thunder down From whence his showers and storms he used to your, But now could meet with neither storm nor shower. Then, aiming at the youth, with litted hand, Full at his head he hurl'd the forky brand In dreadful thunderings. Thus the Almighty Sim Supervaid the ruging of the fires with fire. At once from life and from the chariot driven, The ambitions boy fell thander-struck from beaven;

11

The horses started with a solden bound, And flung the reins and chariot to the ground; The studded barness from their necks they broke, Bere fill a whied, and there a silver spolar, Here were the beam and axio torn away. And scatter de're the earth the shishing framesous lay.

12

The lecethless Pharton, with flaming heir, Shot from the charoot like a falling star, That in a summer's evening from the top Of heaven drops down, or a-van at least, to drop, Thil on the Po his bisated corpus was harrid, Far from his country, in the western world



We may also refer to the 'Story of Dædalus and Icarus,' translated by Croxall :-

Doshius languish'd for his native land; The sea forcelosed his flight, yet thus he said; "Though earth and water in subjection Isid, O cruel Minos, thy dominion be, We'll go through air; for sure the air is free," Then to new arts his complex thought applies. And to improve the work of nature tries. A row of quills, in gradual order placed, Rise by degrees in length from first to last; As on a cliff the according thicket group; Or different reeds the rural pipe compose: Along the middle ruse a twine of flax, The lottem steam are join'd by pliant wax; Thus, well compact, a hollow bending briags The tipe composure into real wings His boy, young learns, that near him stood, l'athinking of his fate, with smiles pursued The floating feathers, which the moving air Here loosely from the ground, and waited here and there; Or with the wax impertisently play'd, And with his childish tricks the great design delay'd-The final musterstroke at last imposed, And now, the next machine completely closed; Fitting his pinions on, a flight he tries, And hung self-balanced in the beaten skies, Then thus instructs his child; " My boy, take care To wing your course along the moldle air : If low, the surges wet your flacular riumes : If high, the sun the melting wax consumes. Steer letween both; nor to the northern skies, Nor South Orion, turn your giddy eyes, But follow me: Let me before you lay Rules for the flight, and mark the pathless way." Thus tenching, with a ford concern, his son, He took the untried wings, and for'd them on : But fix'd with trembling hands; and, as he steaks, The tears roll gently down his aged cheeks;

In tedious exile now teo long detain'd,

Then kiss'd, and in his arms embraced blue fast, But knew not this embrace must be the last; And mounting upward, as he wings his flight, Back on his charge be turns his aching sight; As parent birds, when first their callow care Leave the high nest to tempt the liquid air ; Then cheers him on, and oft, with fatal art, Reminds the stripling to perform his part. These, as the angler at the silent brook, Or mountain shepherd lessing on his crook, Or gaping ploughman, from the vale descries, They store, and view them with religious eyes, And straight conclude them rods; since none but they Through their own azure skies could find a way. Now Delos, Paros, on the left are seen And Samos, favour'd by Jove's haughty queen; Upon the right, the isle Lebynthos assued, And fair Colympe for its honey famed, When now the boy, whose childish thoughts more To loftier sims, and make him ramble higher, Grown wild and wanton, more embolden'd flies For from his guide, and some among the skies: The softening wax, that felt a nearer sun, Dissolved apace, and soon began to run: The youth lo vain his melting pinion shakes, His feathers gone, no loager air he taken: Oh! father, father! as he strove to cry, Down to the sea he tumbled from on high, And found his fate; yet still sulpists by Fame, Among these waters that retain his name. The Fother, now no more a father, cries: "He, learns! where are you?" as he flies; "Where shall I seek my boy?" he cries again, And sow his feathers seatter'd on the main ; Then caused his art; and funeral rates conferr'd, Naming the country from the youth interr'd A Partridge from a aeighbouring stump beheld The Sire his monumental marble build :

Who, with peculiar call and fluttering wing, Chirp'd joyful, and malierous seem'd to sing: The only bird of all its kind, and late Transform'd in pity to a feather'd state; From whence, O Dudalus I thy guilt we date. His sister's son, when now twelve years were pass'd, Was, with his uncle, as a scholar placed; The unsuspecting mother saw his parts, And penins titted for the finest arts This soon appear'd; for when the spiny bene In fishes' backs was by the stripling known, A rare invention thence he learn'd to draw, Filed teeth in iron, and made the grating saw He was the first, that from a knob of brass Made two straight owns with widening stretch to pass; That while one stood upon the centre's place, The other cound it drew a circling space. Davidlus envied this, and from the top Of fair Minerva's temple let him drop; Feigning, that as he lean'd upon the tower Carriess, he steep'd too much, and tntnbled o'er. The Goddess, who the incenious still befriends, On this occasion her assistance lends; His arms with feathers, as he fell, she wells,

The quickness of his genius, once so fleet, Still on his wings remain, and in his feet : Still, the' transform'd, his ancient name he keens. And with low flight the new-shorn stubble sweeps, Declines the lofty trees, and thinks it hest To broad in hedgerows o'er its hamble nest; And in remembrance of the former ill Avoids the beights and precipious still At length, fatigued with long inhorious flights, On fair Socilia's plains the artist lights: Where Cocalus the king, that gave him oid, Was, for his kitslisers, with enterm repaid. Athens no more her deleful tribute sent. That hardship gollant Theseus did prevent; Their temples hung with garlonds, they adore Each friendly god, but most Mineren's power; To ber, to Jove, to all, their alters smoke, They each with victims and perfumes invoke Now talking fame, theo' every Greeian town Had spread, immortal Thesess, thy renown: From him, the neighbouring nations, in distress, In suppliant terms implore a kind redress,

The following passage I take from the 'Orlando Furioso' of Ariosto (born at Reggio, A.D. 1374), as it is strangely appropriate at this time. He describes Astolpho, an English knright, leaving the island, and winging his flight to the Source of the Nile. The English version is by William Stewart Rose:—

## CANTO XXXIII.

Veglio Astolfo seguir, ch' à sella, e la morso
A uso forca ander di palafreno
L' Ispoprifio per l'afia a si gran corea,
Che l' aspita, e l'afia dobe il passe sorno
Da un more all'attre, de la Frencis dalla sociatione
Tornò verso Posente alla montagna,
Che seguna le Francis dalla Siguan.

And In the air a new-made bind he sails,

Panoù in Navarra, ed indi in Aragena, Lasciandoù a chi il veden raro muraviglia. Bento lamej de sinistera Taranoura. Bento lamej de sinistera Taranoura. Vida Galizia, e il Begno di Ulavona; Pai volse il cesso o Goslova, e Niviglia: Nè lucelò presso al mar, sob ras campegna. Città, che non vedevene la tutta Segana.

Vide le Gade, e la mète de pree-Ai primi nevignati Eccele invite, Per l' Africa vagus poi ai dispose Dal ann d' Altina tè i termini d' Egitto. Vide le Balcariche fattose, E vide Evira appresso ai cannain dritto, Poi volte il frence, e torch verso Artilla Sopra Tuara, robe da Spegna dipartilla. Antolpho in his flight will I parme,
Than used his hipportryle like palfrey flee,
With rema and sell, so quick the wellin through;
That head so leaghe sour a counse less free,
Ore the whole land of Gaal the warrior flew,
Frem l'yrenees to libino, from sen to sou.
He westward to the mountains turrend sake,
Whole Yrance's fertile lend from Spain divide.

To Arragon be past out of Navarre,

—They who leikeld, some wondering at the sight—Then, leaves be Tarragon belind him far,
Upon his left, Blessy upen his right:
Tarverend Contlet, Gillrich, Lukon, are
Seville and Cordora, with rusel fight;
Nor city on son-shore, nor trained plain,
but succeptioned throughout the realism of Spain.

Beneath him Cadir and the strait be spied, Where whilein good Alcides closed the way; From the Atlantic to the further side Of Egypt, bent oer Africa, to stay; The inasons Belsacan side secrical, And Ivica, that in his passage by; Towards Arzalia then be turned the cele, Above the sea and severs it from Spain.

14

NGEX.

Vide Marocco, Feza, Orano, Ippone,
Algier, Buzen, totto Citth superbe;
C'lanno d'altre Citth tutte corona,
Corona d'eo, e non di fronde, è d'erbe.
Venno Eierta, e Touigi poi spreus;
Vide Capiere, e'l'Isola d'Alexbe,
E Tripoli, e Berniche, e Toiomitta,
Nin dove il Nisoli nafani si trugitta.

.

Tra la marinz, e la silvosa echiona Del fiero Atlante vide oppi contrada. Poi dele le palle i i monti di Grena; E nopra i Ciranei prese la struda; E travenando i compi de l'arrosa Venura a' confin di Nobia la Atlaisda. Rismos dietro il Cimiter di Basto, E 1 gran Tempo di Amone, d'o oggi è disfasto.

.

Indi giunse ad un' altra Tremissume Che di Maumetto pur secue lo stilo; Poi volan agil altri Etiopi le penne, Che centre questi son di la dal Nilo. A la Città di Naloi il commin tenne Tra Dobolo e Coalle in aria a filo. Questi Cristinai son, quei Saracini, E stan con l'arme la man sempre la confiol,

cri

Sendro Imperator de la Etiopia, Che la beogo tien di sevitre in man la Croce; Di gente, di cittadi, e d'oro ha coqua Quindi fin Bi, dove il mar Nomo ha foce; E serva quana nontra fede peopia, Che può nalvario da l'esilio atroce. Gli è, s' lo non piglio errore, in questo loco Ove al batterno loco mano il foco.

CIII.

Diemontò il Duca Astolio à la gran Corte Pentro di Nubia, e visitò il Senapo. Marceco, Per, and Oran, boking down, Hippons, Algier, be, and Bughs told, Which from all cities hera sway the crowns, No paim or parsley wreath, but crown of gold; Noble Bearts next and Tunis Town Cupys, Alaerba's Irie, the werrior bold, Tripoll, Berniche, Plotemitta viewod, And into Asia's land the Nile parssed.

Twixt Atlas' shappy religes and the sheee, He viewed each region in his spations round; He turned his tack upon Carean hour, And skinamed above the Cyreason ground; Passing the sandy desert of the Moor, In Albajala, reached the Nobian's bound; Left Battus' tomb behind him on the plata And Amunes; now dispolated finee.

To other Treminen he posts, where beel As well the propie are in Mahound's typle; for other Æthapa then his pinions spread, Watch face the first, and lie beyond the Nile; Between Coallie and Dabulas age.

Bound for the Nubian city's royal pile;
Threading the two, where, ranged on either hand, Mesiems and Christians watch, with arms in hand.

In Æthiopin's realm Senapus reigns,
Whose sceptre is the cross; of cities beave,
Of men, of good possest, and broad domains,
Which the Hol Sca's extrement waters lave.
A faith wellnigh like ours that king masintain,
Which than from his prisoneral down may save.
Here, save I err in what their rites require,
The swarthy people are langitude by fire.

Astolpho lighted in the speciosa court, Intending on the Nubian king to wait.

He continues to describe the grandeur of the palace, and among the proofs of his power is one that forms the subject of the following stanza:—

cvi.

Si dioc che 'l Soldan, l'è de l' Egitto; A quel l'a dà tributo, e sta ruggetto; Peech' è in poter di lui dai ammini dritto Levare il Nilo, e dargli altro ricetto; E per questo lasciar mibio diffitto Di fame il Cairo, e teutto quel distretto. Serapo detto è da i suidditi mel: Gli diciam Presto, o Pretrianai noi. The solian, king of the Egyptian land, Pays tribute to this sovereign, as his head, They say, as having Nile at his contained He may divert the stream to other bed. Hence, with its district upon either land, Forthwith might Cairs hock its daily bread. Senapus him his Yulian tribes proclaim; We Priest and Prester Jehn the sovereign name.

The tale is carried on by incorporating the classic story of the Harpies sent by heaven to punish this rich king.

The following stanzas give the prophecy and its fulfilment of the period put to these plagues :-

CEII

E in disperazion continua il messo Uno, che già gli avea profetizato, Che le sue meme non saziano comresse Da la rapina, e da l' odore ingrato, Quando venir per l' aria si vodome Un Cavalier auten un cavallo alata Perchè donque impossibil parea questo, Privo d' oral speranza vivea mesto.

Or, che con gran stupor vede la rente Sopea ogni muro, e sopra ogn' alta torre Entrare il Cavaliero, immantenente E chi à narrario al Re di Nubia corre; A cui la profesia ritorna a mente ; Ed obbliando per letizia torre La fedel vergs, con le mani innante Vien beancolando al Cavelier volante.

Astolfo ne la piazza del castello Con spaziose rote in terra scoss. Pol che fu il Re condetto innanzi à quello, Inginocchiossi, e le man giunte stesc, E diase : Aprel di Dio, Messia novello, "S' le non merte perdena à tante offene,

" Mira, che proprio è a noi peccar sovente, " A voi serdonar sempre a chi al pente.

exvii.

" Rispose Astolfo : Ne l' Angel di Dio, " Ne son Messia novel, ne dai Ciel vegno; " Ma son mertale, e peccatore anch' io,

" Di tanta grazia, a me concessa indegno. " Jo farò ogn' opra sociò che 'l mostro rio, " Per morte o fuga io ti levi del Regno.

"S' io il fo, me non, ma Dio ne loda solo " Che per tuo ainto qui mi drizzò il volo."

Fa' questi voti a Dio, debiti a jui, A ini le Chiese edifica, e gli altari. Cost parlando, andavano ambidos Verso il Castello fra i Baron preclari. Il Re comanda k i servitori sui, Che aubito il convito si perpari p Sperando che non debba essergli tolte La vivanda di mano a questa volta.

Dentro nua ricca sala lumantinente Appareachiossi il convito solenne. Col Senáno a' assise solamente Il Duca Astolfo, e la vivanda venue. Ecco per l' aria lo atridor si sente Percusa intorno da l' orribil renne. Eceo venir l' Arpie brutte e nefande Tratte dal cielo a odor de le vivande. And him had plunged in utterment despair One that to him erewhile had prophesied

"The loathsome Harpier should his daily fare " Leave unpolluted only, when astride " Of winged home, arriving through the air,

"An armed cavalier should be descried." And, for impossible appears the thior, Devoid of home remains the mournful kine.

Now that with wonderment his followers app The English ouvalier so make his way. O'or every wall, o'er avery turret high, Some swiftly to the king the nows convey. Who calls to mind that ancient prophecy, And beelless of his staff, his weated stay, Thro' joy, with ontstretched arms and tottering feet, Comes forth, the fiving cavalier to meet,

Within the castle court Astolpho flew, And there, with spacious wheels, on earth descended, The king, conducted by his courtly crew, Before the warrior knelt with arms extended, And eried, "Thou Angel, sent of God, thou new "Messiah, if too sore I have offended, " For mercy, yet, bethink thee, 'tis our bent

"To sin, and thine to rardon who repent." " Nor sneel,"-eood Astolaho made reply,-

"Nor new Messiah, I from beaven descend; " No less a mortal or a singer I. "To such high grace unworthy to pretend.

"To slay the monsters I all means will try, "Or drive them from the realm which they offend.

" If I shall prosper be thy praises paid, "To God alone who sent me to thy sid.

" Offer these yours to God, to Him well due; "To Him thy churches build, thing altars rear." Disconzaing so, together wend the two, Mid Barons bold, that King and Cavalier The Nubian Prince commands the menial crew Forthwith to bring the bureitable cheer: And hopes that now the foul, rapacious band, Will not dure snatch the victuals from his hand.

Forthwith a solemn banquet they prepare Within the gorgeous palace of the king. Seated alone here greet and sovereign are, And the attendant troops the viands bring, Behold! a whitzing sound is heard in air, Which echoes with the best of savage wittz. Behold I the band of Harpies thither flies, Lured by the scent of victual from the skies,

16

Erano setts in una schiera; e tutte Voite di denna avenue, pullidre e succite, Per lunga famo attenuate e ascisite, Orribili à voder, più che la moeto. L'alsoce grandi avenu, deformi e heutte; Le man rapaci, e l'ugne in curve e torre; Grande, e fecilo il ventre, e lunga coda, Come di serve, che s' ancira, e secola.

CXXI.

Si acadeno venir per l'aria, e quasi Si veggon tatte à un tempo in si la mena. Başire i cità, e riversare i vasi; E molta feccia il ventre ler dispena, Tal ch' egil è form d'attarare i mai, Chè non si può patir la puzza immenaa. Astolio, come l'ira lo conjuizo, Coutra ell'associal ancelli di ferro striace. All beer a female face of pallid dys,
And seven in mander are the horris band;
Enacisted with hanger, lenn, and dry;
Fouler than death; the pinkens they rapand,
Ragged and longe and shapeless to the eye;
The tabon encolord; rapacious in the laund;
Frid and large the pannet; in many in fold,
the mathes their foun and honder table are sold,

The fowls are heard in air; then swoops amain; The covery wellnigh in that instant, reads The food, of critican fit wased, and a rain Of nessone cediure on the board descends. To stop their neartile king and duke are fair; Such an insoffendbe stretch effects. Against the greedy birds, as wrath excises, Asserbo with his brandished michales mattee.

The three next stanzas give the account of the success of the Harpies, the despair of the king, and the resolve of Astolpho to use his magic horn. So he again tempts the monsters, as follows:—

ur.

E così in una loggia s'appurecchia Con altra menas altra vivanda mora. Ecco l'Artjo, che fan l'unana veccha : Antolio il como ambito ritrova. Gli augelli, che non han chima l'orecebra, Udito il acon, nen pon stare à la prova; Ma vanno in figra pical di poura; Ne di che, si d' altre bano più cura.

CXXVI.

Subito il Paindia dietro lee aprona; Volundo esce il destrice fuor de la loggia, E cel esset la gram Cirka abbandona; E per l' aria, escrimado i mostri, poggia. Astolfo il como ruttavolta suona; Paggon l' Arpie verso la Zena roggia Tanto che rono à l' Altussimo mone. Ore il Nilo ha, se in airun lango ha, finole, Quasi de la montagua à la maline Entra sotterra una profenda grotta Che certisalma porta seute ai dice Di chi à l'Inferno vuoi acusder utlotta. Quavi d' è quella turba predatrice, Come in sicuro albergo, ricordotta, E giù sin di Cocito in si la peoda Scova, e più là, dore quel suon non ola.

evxvni.

A l' infersal caliginssa buca, Ch' apre la strula à chi abbandona il lame, Finî l' ortifel suon l' incisto Duca, E fe raccorre al aso destrier le piume.\*

The tale continues to describe the descent of the English Paladin after tying up his winged steed, the horrors, and his forced retreat on account of the poisonous fumes. He stops up the mouth of the cavern and—

### CANTO XXXIV.

Not monta il volatore, e in aria s' alza Per giunçer sh quel monte ie sh la cirna, Che non lontan coa la superna balta Dal cerdio de la Lana cener si stican. Tanto è il devir, che sh vader l'incalira, C'à al cielo aspira, e in terno non stima. De l'aria più, e più sempee gendagna ; Tanto, ch' al lejoce va de li montagna.

Then backed the priffus-horse, and sourced a flight theory by most the monaton type be wheney the program of th

<sup>\*</sup> I coult the English in these and some of the following stanges, where I think the translation falls for short of the original.



Bellerophon fights the Chemiera.

A glowing description of beautiful scenery follows, and of the gorgeous palace, where-

Nel lucente vestibulo di quella Felice cass un Vecchio al Duca occorre, Che 'l manto ha rosso, e bianca la connella. Che l'un può el latte, e l'altre al minio opporre. I eripi ha bianchi, e bianca la mascella Di folta barba, che al petto discorre;

Ed è al vezerabile nel viso, Che nn degli cletti par del Paradiso.

Costui con lieta faccia al Paladino. Che riverente era d'arcion disceso, Disse: O Baron, che per voler divino Sei nel terrestre Paradiso asceso. Come che nè la causa del cammino,

Ne il fin del tuo desir da te sia intero: Pur credi che non senza alto misterio Venuto sei dall' artico emisperio.

٠ Continuando II Vecchin i detti suoi Feor maravigliare il Duca nasal Quando, scorrendo il nome suo, chi disse Easer colni, che l' Evangelio scrisse;

Quel tanto al Redenter caro Giovanal

Per oni 'I sermone tra i fratelli usefo. Che non dovos per morte finir gli anni : Si che fa camea, che 'i Figlipol di Din A Pietro disse : Perchè pur t'affiani, 8' io vo'che così aspetti il venir mio? Benché non disse : Eell non de morire : Si vede pur, che così volle dire.

LIX.

Quivi fu assento, a trovò compagnia, Chè prima Enoch, il Patriarca, v' era : Eravi insieme il gma Profeta Elia, Che non han vista ancor l'ultima fera, E foor dell'aria pestilente e ria Si poderan l' eterna Primavern Fin che dian segno le Angelicha tube. Che torni Cristo in un la bianca nube.

Con accordicaga grata il Cavaliero Fu dai Santi alloggiato in una stanza : Fu provviste in un'altra al suo destriero Di buona biada che cli fu a bastanza. De' frutti a loi del Paradiso diero. Di tal mpor, che a suo giudicio, sunza Scusa non sono i dun orimi Parenti. Se per quei fur si poco ubbidienti.

The following stanzas are the conversations that ensue, in the course of which St. John informs the English cavalier that he has a mission to perform in recovering Orlando's wits, and thus concludes :-

### CANTO XXXIV.

"Gli è ver che ti bisogua altro viaggio " Far meco, a tutta abbandonar la Terra, " Nel cerchio della Luna a menar t' aggio, "Che dei pianeti a noi più prossizza erra; " Perchè le medicina, che può saggio

" Rendere Orlando, la dentro si serra, "Come la Luna questa notte sia "Soora noi giunta, el porremo in via."

LIVIN

Di questo, e d'altre cose fu diffuso Il parlar dell' Apostolo quel giorno. Ma not che 'l Soi a' abbe nel mar riuchiuso. E sopra lor levô la Luna il corno; Un carro appurecchiosa, ch' era ad mao D'andar acorrendo per quei Cieli interno:

Quel già nelle montagne di Gludea Da' mortali occhi Elia levato avea. "Tis true to journey further ye will need, " And wholly must you leave this nether sphere;

"Tn the moon's circle you I have to lead, "Of all the planets to our world most near. " Because the medicine, that is fit to speed "Insue Orleado's cure, is treasured here.

"This night will we away, when overhead " Her downward rave the silver moon shall shed."

In talk the blossed apostle is diffuse On this and that, until the day is worn; But when the sun is snak i' the salt-sea oone. And overhead the moon uplifts ber born, A chariot la prepared, crewbile in use To scour the heavens, wherein of pki was borne From Jewry's misty mountains to the sky Sainted Elias, mpt from mortal eye.



ASTOLISM AND ST. JOHN.

#### LXIX.

Quattro destrier via prh che fiammi rossi, Al giego il sando Evangulata aggiusas; E poi che con Antidia mastrias; E prese il ferno, in verso il Civi il punse. Routando il curro per l'aria levossi, E tosto in menzo il fiacco eterno giumo; Che I Vecchio fa miracoloramente, Che, mestrie lo pasade, mo esa ardente.

### LXX.

Tutta la Súrra vareano del foco, El indi vanno al Regno della Luna. Veggon per la più parte caser quel loco, Conse un acciur, che non ha reachin alcuna ; E lo trevano ugualo, o minor poco l'è ciò, chi lo quasto globo ai raguna, In questo ultimo globo della Terra, Metterdol di mar che la curocoda a ferra.

# LXXI.

Quiri ebbe Astolio doppia maraviglia; Che quel passe appesso era si grande, Il quale a un piccio bende rassunglia. A noi che lo mirano da queste bande; E che agenzar conviengli ambe le ciglia, E sul la Torra, s' l'unar, ch' intorno sparde, Discorner vuol; chè me avendo luno, L'instangin les poco alta si conduce. Four goodly coursers sext, and redder (at Than faces, to that fair charnet yelves the sire ig Who, when the knight and he well assisted are, Collects the reins i and howeversand they supire. In sire givenes unfully rose the cas, And reached the region of esternal fire; Whose but the saint by mericle suspenda, Wille through the parted air the pair surregular.

The chariot, towering, threads the fiery aphere, And rises theree into the luner raign. This, in its large part they find as clear As polished steel, when undefined by stain; And such its exents, or little clies, when nour, As what the likelite of our earth contain; Such as our earth, the last of globas below, Including seas, which round about it fiew.

Here doubly waxed the paladin's surprise, To see that place so large, when viewed at band; Rescability but a little loop in also, When from the globs surveyed whereon we stand, And that he both his eyes beloved to strain, If he would view Fauth's dreling seas and land; In that, by reason of the leck of light, Their itsues a strand to britle habits. Altri fiumi, altri liqhi, altre cumpagne Sono là su, che non son qui tra noi: Altri pisui, altre valli, altre mortacne, Che hon le Cittadi, hanno i Cauchi suoi, Cen case, dello quai mai le più magne Non vide il Paladin prime, al poi ; E vi sono ample, e solitarie selve, Ove le Nissie cutter canciano belva.

Non statte II Duna a ricercare il totto; Chè là som era sacress a quello effette. Dall' Apostolo santo fa condutto Iu un valles fra due montagne stretto; Ove minibilisente em richato Ciò, che si però e que nottro difetto, O yer colps di tempo, o di fortuna. Chè, cho si pende qui, là si ragma.

The stanzas following these describe many wondrous scenes, and, in the 87th, his own object is realised:—

La più enpace, e piona ampella ov' era Il seumo che soler far navio il Coate, Antolfo tolle e; no ca è al leggiera, Come stimb, con l'altre cessodo a monte. Pelans che il Platallu da quella Niera. Piena di luce allo più basse smoote, Menato fu chill' Apostolo sando la tas l'alaçio, ov' era un funure a canto.

# CANTO XXXVIII.

Somo era Astolfo dal giro luceute Alla margices alterna della Terra, Con la felio ampolla che la mente Doves amanza al gram Mastro di guerra. Cu' erba quiro di virta coccilente Mostra Giovanni al Duca d'Inghilterra. Con essa vuol ch' al suo ritorno tocchi Il Eè di Nubia, a gli rianni gli cechi;

TTIP.

Acciò per questi, e per il primi merti Gente gli dia, con che Bierria assaglia; F., come poi que i pro il inseperti Armi, el acconei ad uso di hattaglia, E senza danno pessi pei deserti Ore l'arcus gli constai abbarbaglia; A pento a punto l'ordine che tegna, Totto il Wecchio nathissimo gli insegna. Pei lo fè rimentar su quello Alato, Che di Beggiero, e fu prima d'Atlante, Il Plasinia Inscrib, licenziate Da Sun Giovanni, le contrade sante : E, scorolatanio è Nitio a lato a lato, Tosto i Nubi apparir si vide innante ; E, nella Terra, che del Begno è espo, Scose dall' aria, e ritrovò il Schapo.

occur and arms, entered it occupe.

XVIII.

Mobio fa il gandlo, e notas fo la gioja,
Che porto e quel Signer est non ritorno ;
Chè bes si ricordava sidla noja,
Che gil avea solto dell' Arpie d'interno.

Ma yol che la grouezza gil discuoja
li quell' moste, che gil gil tisse il giorno,
E che gli rende la vista il prima,
L'adone e colo, e como un Dio militima.

Astolpho again used his steed on several occasions, and wrought many wonders, but my quotations are already long enough.

TASSO.-Born at Sorrento, a.D. 1544. Translation, by Edward Fairfax, a.D. 1600, and by J. Wiffen.

## CANTO L

THE ANGEL GARRIEL

All bianch vests, ch' ban d' or le cime, lafatrabilmente agili e preves. Fende i vent is le mark, e va mobiline Sovra la terra e sovre il mar con quieste : Cod vestito, induirizont all'imme Parti del mondo il Messagnier celesta : Pris sett Libino monte ci si riteme, E si librò sull' adeguate penue.

Of silver wings he took a shining pair,
Fringel with gold, unsented, nimble, swift;
Fringel with gold, unsented, nimble, swift;
With these he parts the vinds, he eloods, the air,
And over sees and seath himself doth lift.
Thus clad, he cuts the spheres and circles fair,
And the pure skins with mered fashbers clift;
On Jekanon after his fook he will
And abook his wings with rory May-dews wet,
D 2

The wizard Ismene conveys the Soldan from the battlefield to Jerusalem by the means described in the following stanzas:—

### CANTO X.

XV.

E sovra un carre soc, che non loutuno
Quinti attendas, col fler Nicombo ei ainde :
Le briglie allenta, e con mesetra noaso
Anbo I corrieri alternasaente finde.
Quei vanco si che l' polversono piano
Non rities della rota corran o del piede :
Funzar gil vedi ed aneler nel corno,
E totto bianchergiar si sprossa il morco.

20

XVI.

Menwiglie disè : s' adma e stringe L' aer d' interno in muvelo raccolto, Si che I gam carre ne ricepre a cingo, Ma non oppar la nabe o poso o nelto; Na non oppar la nabe o poso o nelto; Pensenteria per lo chisso e fotto : Ben veder posno i duo dal cavo seno La nebbia intorno, e futori il cel serseno.

----

Stupido il cavalier le ciglia inarca, Ed lecesson la fronta, a mira fiso La mule e l'actro chi ogni intoppo varon Veloce sì, che di valor gli è avviso. L'altro che di stupor l'actino corca Gli scepe sil ciu dell' immobili viso, Gli rempe quel silenato, a lui rappella; Dud'ei si acces, a poi così farella:

xxv.

Coal gir ragionando, insin che furo La "va presso vedena le tende alazano: Che spettacolo fu crudele a dore! E in quante forme ivi la morte epparse l Si fe' negli cochi altre torbido a scure, E di doglia il soblano il volto sparse. Ahi coa quanto dispregio ivi le degne Miro dancer suo cish tenuste insegne l

TXVI.

E scorrer listi i Pranchi, e i petti a l volti Spesso calcar de' suoi più noti amici ;
E con fanto supreba agli insepotti
L' arme spogliare e gli aktit infelbit ;
Motti concere in bunqu ponny accolti
Gli ascati corpi degli estremu uffici
Altri soppor le fiamme, e 'l volgo misto
D' Arabe C Truchi, a um foco ardre è visto.

His magic oer stood ready at command,
They mount; the Stranger, situating all delay,
Shook the rich rich, and with a master's hand
Lashed the black steeds, that, ramping, socravel eway
So owift, that not the sards a tree bettery
Of hoof or wheel; they vanish as they come,
Fredilly precipitate, and snort, and anich,
Paw the purchast had, and, andent for their home,
Champ this respondent his tail white with fleery-free.

Away! away! and still as fast and far They fly, the air to clouds condensing relied in heaps eround, and draped th' enchanced car, Yet not a weath could human eye belood; Nor stoms nor rock (surprising to be told.) Hurhel from the most magniferent machine, Might of its enquisher volume prierce the fold! Yet by the two within were all things seen— The clouds, are, earth, and sky, all rowly necess.

With writhling forrbend and stricht bew, the knight On cloud and our paned stepelly intest,—
In wheels sevened wines, and its cureer a flight, So roll and assumbless on it a way it west.

Or the smooth soil; the Stap picupiente, Who saw his raptized spirit, stand aghast At the smblims and mystical porters.

From his abstraction roused him is role at last.

Came to his lips, from which there engre questions passed.

Thus commune they; and now the phin they pass, Near which their dones the white parificas rear; There what a cruel gight was own a last, In what unausuhered shapes did death appar? To Solyman's server uyes a trouble tear Of greef and passion rose at the survey, And filled his few with ghoon; six era and may, In what with have, how inculted, by His errors and marines, feared, so formed of vestershay?

Ha may the Pranks in carnival obsepcend.
The field, 40 transpling on the frees pale
Oh his situs friends, as from it 'unbarried shed
They tore the proposes versi and shirts of mail,
With rule insuling tantes: down the far vale,
In long, long order, many or functed quite
Was seen ettempling with the voice of wall
Bedies believed, whilst seens brought cardien far,
And Turks and Arab benayed in one commingling pyre,

NAVII.

Sotjárò dal profusido, q. 7 ferro trasse:
E dal carro lancionis, a correr volle;
Ma il vecchio incantatore a se il ritrasse
Sgridando, e raffren l'importo folla;
E fatto che di nuovo ei rimontanse,
Drizzò il suo corno al pi du sublime colle.
Cal alquanto e'andaro, insie ch'a tergo
Lacaire de' Pracchi il militare authero.

xxviit.

Smeniaro allor dal carro, a quel rejente Sparre, e presona a piedi insicene il calle, Nella solita nube occultamente, Discendenda a sinistra in una valle, Sin che giunacru la dore ai ponente L'also monte Sino volge le spalle. He despiy nighed, he drew his sweed in map, And from his sest leaved, eager in their blood T average the insuit; but the Archimage His most resolve indicatily withstood; And, cushing by rebuke his farious mood, Made him perforce reasure the next renigned; Then to the follows hills his concess pursued, Baffing the rival pinions of the wind.

Alighting then, the chariot disappeared, and by aide to sice the travellers went; Still contained in the closel, their course they steered hown a deep vale of difficult denorst, Till they arrived where to the Occident Soldines Mount Sion turned its shoulders wide, In rocks and cliffs funtatisably rents.

### CANTO XIV.

THE WIZARD ISMENE.

Da questa or quel ch' al pio Bugliou discende, L'ali dorate inverso iui distende.

Nella mai vision nel sonno offerse Altrui el vagle inmanicio el belis, Come era questa a lei, la qual gli aperse I accetti del cielo o delle stelle : Onde, sicontre entre unos oppello, el socree Ciò che lassuno è veramente in elle : Parangii esser tradato in no serceo Condisci, del arree fantane adorno e pieno.

E mentre anmira în quell'eccelse loco L'ampienza, i mult, I lami e l'armonia, Eco cinto di rai, cinto di foto, Un cavaliero incontra a lui venia, E a sunce allato a cui merble reco Qual più delce è quagrià, parlar l'udia : Goffredo, or non m'accogli, a non ragione Al Bòs amico? er non concedi Ugene?

Ed ei gil rispondea: quel novo aspetto Che par d'un sol mirablimente adorno. Dell'artica socitisi il sulo intelligato Sriano ha al, che tandi a lei ristomo. Gil stendas poi con dolos anico affetto Tre flate lo braccia al collo intorno E tre fisto invana cinta l'insmago Paggia, qual hera segno di ser vago.

VII.

Sorridea quegli s, non già, come credi, Dicea, son cinto di terrena veste: Semplice forma, a nuclo spirto vedi Qui, cittadin della città celeste. This dream to pious Godfrey now descends, And o'er his placed face its radiant wings extends.

Such semblances, such shapes, such portroits fair, Did never yet in deceas or sleep appear, For all the forem is nose, in earth, or all, or forem and the forem of the first the sleep and the forem of the first the sleep and forem, all the three modelseas, amountly, stempe and more, All in that vision well procented wors, Illis dream had placed limit in a crystal wide, Bestew this global free, top, bettom, side.

Here, as the moring spheres, the vent blue oby, The lights, and the rist musc he admires, Lo, to bit side a winged knight drawn nigh, With sumineaus creamed, and circumfused with fires! And in a value to which the element choics And prefet transings of sweat sounds below, Would be but discord, mid, "Canet thou bestow No mills, or do that one not by once-levell Hugo know y."

To which the Dake repided; "That aspect new, Which like the pleveing sun so brightly shines, Has dassied so mine instellectual view. That it can ill recall its ancient lines:"
That it can ill recall its ancient lines: "
And saying this, so prech him be inclines;
Thrice with a food affectionate embecce
Around his new his leving arms be twines;
And thrives th' recircled form and radiant, from
Ply like the summer cloud, of shald the sundemus choos.

Prince Huge smiled; "And think not, as of old," He said, "that earthly robes my limbs invest; My naked spirit here dosk thou behold, A simple shape; I dwell, a glorious guest, In this th' illumined City of the Elest; Ma, perebè più lo tuo desir s' avvive Nell'amor di quassis, più fino er mina Questi lucidi alberghi e queste vire Finame, che mento eterna informa e gira; E in angeliche temper coli le dive Sivene, e'l suon di lor esteste lira. China poi diore, e gli addiab la terra Gli occhi a ci che quel gobo ultimo serra.

Quanto è vil la ongion ch' alla virtude Unanna è coltagifà premio e contraste! In che picciscò cerchia, e fin che mole Solitudini è atretto il vostre fiasto! Lei, come isola, il mare intorno chisule; E bii ch' or coma chiamate, or vasto, Nulla eguale a tai nomi ha in so di nagne; Ma è hausa pallole e bever stegno.

XI.

Cei l' nn disse; a l' altre impisso itamà Volse, quasi alegnande, a ne sorrine;
Che vide un punto sel nan, terre, e finni,
Che qui pado distinit in tunte puòre;
Ed ammisò che pur all' ombre, al fumi.
La nostra folle umanta à alfane,
Servo imperio occunado e motta fuma,
No miri l' si el d' a se n' invisia calanna.

• But pure look round more family; behold— To equicken for the akes by your desirtes, Those locid walls and starry orks of gold, Whilele, whireling round, the Elernal Mud inspires! Observe the beauty of those sires choice of Of sertiples; how the surplinial sever strains, In encored song to their calculail type six sorting; Next view," he said, and pointed to the plains of centry, "bever, what you internating globe contains."

"Think of your earthly titles and designs; Will what a 'tile roward it virtue crowno! Mark what a little ring your pick outfires! What sabed descris your value glories bound! Earth like as island the Mise as flows roomd. Now called the Mighty Deep from court to coart, Now, the west Coen; 10 that purposes sound Neught corresponds, to authorise such a loast—This but a shallow you, a narrow marked it now.

The Spirit said: a odd he his slight let full to earth, and unised with a serven disabir; Slemnik to a point, sone, streams, and mountains tall the seve, remote, but here disdiquished pissil; And much he wendered that weak man should strain Art shades and mainst that seem before his eyes, and claims those rainst before his eyes, and claims those rainst a beliebe and for the strain. And claims the rainst a beliebe and followed, files, Nor heeds the "myttime valve that calls him to the sides.

Tasso thus describes the flight of Armida from Western Europe to Assyria, through stormy skies, in her aërial wain:—

CANTO XVI.

Ells sel curro seu, che presto aveva,
S'anide e, come ha in mea, al clei si leva.
She as is usual mounts, and fast away doth fly.

LXX.
Caica le nobl, a tratta l'aure a voia,
Ciota di nembi e turbini scordi:
Passa i lifi segretti sil'altro polo,
E i terre di ignoti shitatori;
Passa d'Alcide i termini, zh' i suolo
Appessa degli Esperti, o quel de' Modi;
Ma su i mari scopeso ili corso timo;
Indio che ai ilidi di Soria pervino.

LULU.
Quinci a Dumascu non s'iteria, ma achiva.
Il già ai caso della patria supetto.
E siriani il curron all'informati circa.
Or'è tun l' code il mo castello cretto.
Qui ginnan, l'arrei o ei docastila priva.
Di sua presenza, e socglie ermo ricetto,
E na vari pensieri disblui ai ragina:
Ma tosto ecde la vergogna all'im.

The clouds she cleaves, and round her doth exacti Theuders and temperat, lightnings, wave, and wind; The regions subject to the outstern pole, And all their unknown catters left behind, Calpe she created; nor, in the fretchi mind, Stooged to the Spanised, or the More, but o'er The Malland Sea be wriged are inclined; Nor to the right, nor to the left hand bore, Till in mid air she muched the known Aurrian abore.

Not now to fair Barmacus does also post, But alons the supect of her quoe dear inst, And guides her famile to the Dead Sew cost, Where the strongholds of the Euchastress stand. Allghidig here, he from her dutorous hand Of dames's and of pages blides her face, And, wandering lonely out the sea-heat strand, Where in and thought a thromand doubts she cast, Till grief and shans, to worth gare place at last. I complete this chapter with several curious extracts from old writers, bearing more or less on the subject of Aerostation. They are cited by M. Rozier in his 'Dissertation sur less Aerostates des Anciens' (Geneva, 1784). The first relate to the automaton Dove made by Archysas of Tarentum (400 to 345 s.c.), which is thus noticed by Aulus Gellins, in his 'Astic Nights.'

May ascents of this set appear to have been given in the same of Denvertine by ignorant more, who shaltered themselves mother the rack and subscript of scheme. In that which Arthytic the Pyllappears is related to have invented and periodest is not less marvellon, though it appears less about if for many more of emissions some goal to strotte, and if normal the philosophure, as now vilgionst searcher is manipuly, bear, in a constrict, as by a certain mechanical set and power to fly; so slosly was it balanced by weights, and put in motion by hidden and calculad size.

Horace ('Odes' I. 28) refers to his performances, especially his experiments with the Sphere:—

Te, maris et terre numeroque excentis arene, Memoren cobibent, Archysa. Puteras exigel, prope littan purva Marinaon Minerra. Nec quidquam tibi prodest Acrias tentuse domos, nalmoque extonium Frequirisse poium, posetiuro.

HORACE, Curm, I. 28.

Arrivate libro stage, who measured the Eurth and the Souand did count the guides of much that are infeited in number, now that you be extended most the Matinian shore, covered only with a muall quantity of data, is it of any service to you, who wert as soon to dry, that you pertented into the brond howers, and by a treat and compeniousers understanding, extended your rivous from, one Pole to the other?

Claudian, in his 'Epigrams,' makes Jove speak as follows, of the Sphere of Archimedes:—

Hith, et al superse tails detra dedit. Hencine mertiali proprises priorita cursi? Jam mess in fingili indiffus orbe labor. Jam mess in fingili indiffus orbe labor. Jam poli, remunpo felone, fisupene Dereum, in participation of the proprises and loctome varies faroulteurs spiritus autis. Ex vivem certis mentibas meys topos. Percentri proprism mentibas signifire anoum Ex timustas none Cytakin assess most Ex timustas nove Cytakin assess most proprism sum velveras, authat industria suralization of the control of the control of the Quid fibb intensive noulire Schumens maker?

Æmola natura: parva reperta menus.

Jupiter in parvo cum corneret arthera vitro

When in a narrow glass Jove saw the skies, He smiled, and thus to golds expressed surprise: "See, how man's talents insistate our ways; "My heavenly work a fragile globe displays:

"An aged Syracusen, by his skill,
Armages poles, laws, harmony, at will,
To stars, a secret spring gives motion true:
The parts with standiness their path pursue.

"A notice, framed by hand, receives the Sun.

Which through the year, proceeds his course to run;

And Cyathin, feigned, is seen each month to trace

The orbit o'er, and apoin show her face.

"Audacious art, the world with pleasure, rolls:
"The human rolled celestial orbs controls.
"Why, at Schoners' thunder, worder feel?
"All Natory's idea. those facers one reveal."

Many authors have endeavoured to throw a light on the mechanism of this wonderful Sphere; and perhaps the best explanation is that due to Cardan, as given by Gasper Schott or Schottus, in his 'Magia Universalis':—

Carlas considered it probable, in his distances of the malter of the sphere, that is was not you in motion by the application of verigink, but by marked ensisted as in. "For its way, "registed out with difficulty to enclosed, and when enclosed could not maintain perpetual nestion, and would distingte the weeks; while external waveles in medicion on solid only word communication an displantable power to the given. Therefore it was a much neight to take for which the special is a simple special to the probable of the special control of the special

Cardan has the following remarks on the Pigeon, in his 'Variarum Rerum,' book xii. chap. 58:—

If has been questioned whether a wooden pigues could be made such as we have stated elsewhere, on the sattlerity of Gellin, to have been faircated by Archysts of Terretts, which would be able, without externing concentral, to take light, and when it reade remain intervalds. Now we have some langue and concentral concentral concentration of the contraction of the concentration of the contraction of the concentration about the contraction of the concentration about the contraction of the concentration of the c

Laureus Laurus enlarged on the subject. He is also quoted by Schottus in his 'Magia Universalis':—

The shells of keneggs, if poperly fills and well occured against the potentiation of the size and expected to solar rays, will assent the the size, as the contains unfer a natural cleancy. And if the egg of the larger description of wears, or leader balls, stirched with first though, to filled with sites, the parest sulphur, unfainted to the size of th

The Jesuit Schottus, already mentioned, has collected the ideas of many authors who had withen on Nature's miracles. He throws great light on the production and use of gas, in his 'Magia Universalis.'

Mendom (in 'Viridaria,' 18b. ill. probl. 471 discussion a publicar which previous writers had touched on. For having demonstrated the fact that five is more shelline, nav., and of less gravity than air, it follows as a corollary from those premises that it collects the air when contiguous to the fire. In support of this opinion Mendons asserts that, should a vessel be raised above the course superficies of the

an support or cans opinion memoras asserts that, should a vessel to raised above the convex superficies of the air, it may be sustained in that air and propelled with ears, if there be not another counteracting force. We find by experience that substances of greater gravity than water will, when filled with air, foat in that

we mit ay apperance that amountees or greater grivery than water will, when meter will, we need with an index in that of earlier within it is not in that of any hrass or iron vessel which when filled with air is sustained on the surface of the water and not submerged, although its section or will be a surface of the water and not submerged, although its section crust vit is much reveater than that of water.

Edying on this experience Merdons thus completes the argument. "Any treas vosal full of air, which charries would slid, it is notation of one terms of the water flower, sharelily of non-private specific gravity, conceptually a woolen ship, or one of any other material, planed on the number of an artist superficie and filled with elementary fars. will be established in this position tills approvintly of the vouch become graviter than the containing prover of the first it contains. Nor as the nature of fare unificately surely to ignive and consume which gives in picking for the state of the containing the containing

In such terms has this matter been treated by Meadona (died 1626), nor is there any improbability involved in his view, whether the element of fire be placed above the air, or what is still more credible, the ether-that is the purest air. Although any wood, iren, copper, lead, and such like metals are weightier than an equal volume of water, and for that reason will sink in water when there placed alone, yet if fehricated into hollow shopes, and filled with our impure and heavy air they awim upon waters and are adapted to the construction of ships, and are austained by water without danger of immersion; thus although these bodies are of greater specific gravity than our air, nevertheless, when shaped into a boat and filled with that very light material, they can float in the air, and are suitable materials for the construction of small ships, because the entire work composed of the little ship and the other can be made lighter than an equal volume of our impure oir, even in the highest region.

Albertus Magnus (born about A.D. 1190), at the end of his work 'De Mirabilibus Nature, says :--

Take one round of sulphar, two pounds of willow-carbon, six pounds of rock-salt ground very fine in a marble mortar. Place, when yes please, in a covering made of flying papyrus te produce thunder. The covering in order to ascend and float away should be long, graceful, well filled with this fine powder; but to produce thundor, the covering should be shert, thick, and half full.

This receipt is to be found in the 'Secrets of Decker,' liv. iii., under the title of Flying Fire. Magie was the guise of the dark ages for the progress made by a few in chemistry. The following is an instance, from Remigius, in his 'Dæmonolatria,' cap. 25:-

There is no doubt the following will be considered incredible by all, and perhaps ridiculous by many ; yet I can ever that two hundred persons testified to its truth, whe, when I held the office of Dunmvir, were condemned by me for aroun, and thus atomed their crime of sorcery. On stated and regular days they assembled in a crowd on the back of some lake or river, secluled from the observation of passers by, and there they were in the habit of lashing the water with a wand received from a demon, till such time as vapours and mists were produced in large quantities, and with those they were went to your on high. The exhalations thus prevoked condensed themselves into thick and darkling clouds, agitated and swept the heavens, assisted in their atmospheric war by the evil spirits whom they wrapped in their felds, and at length in a hailstorm smote the earth in their fury, Salome and Dominics Zabella add, that before they thus agitated the water they were in the practice of

throwing into it an earthen not, in which, a little previous, a denot had been enclosed, without the knowledge of the lookers on, or some stones of such size as they wished the hail to be

Decker Mayreth states that he and his confederates in crime used to receive candles from a demon of an exure colour, and sail with them some distance from the margin of Lake Fentersegrabe, hold the light downwards, and let them drop freely into the water; that after that they scattered and spread some medicinal powder over the surface, that they then with black rods bestowed on them by his demon most vehemently lashed the waters, accompanying the action with a repetition of incantations calculated to preduce the desired results. When all this had been done, the sky become evercust with cleuds, and discharged torrents of rain and hail on those localities which they mainted out. The mode practised to excite the clouds was not confined to the middle neve. Pensanian tells as it prevailed for many ages in Arcadia, and was practised on Moont Lycam in that country. In that country, he says, was a fountain named Agno, naturally so admirable that the art of divination was there cultivated in a very curious manner, the water being gently moved with a branch of an oak, in a short time there are a from it a vapour like a small cloud, which, soon expanding and embracing ethers, discharged heavy showers. This incantation, therefore, is not an invention of modern ages. It is not the invention of old hags, whose mental powers were deprayed by demons, or perverted by visions or dreams, it was practised by men of keen intellecta. and acute investigation, who minutely observed, critically examined, and deliberately adopted their convictions.

Barbelina Hayal adds, that tubs turned upside down were propelled through the air by sorecrers, assisted by demons, and hovered for some short time over the spots which had been doomed to calamity, and at length shattered into stones and flames, inflicted sudden injury, and crushed every impediment.

Also Delrio, in his 'Disquisit. Magic.,' lib. ii. quæst, 11 and 12 :-

Mercus the Venetian (Marco Polo) in his travels in Asia relates, that the Tartars see able, through the arts of demons, to excite storms and fogs when and where they please, and that on one occasion, when entrapped by robbers, by such means, he effected his escape with difficulty. Historius elso (Hist. Surmatia) relates that the army

of the Tartars being in a battle and forced to break the line, was rallied by their standard-bearer, who happened to be a magician, and who involved the enemy in profound darkness by his incantations.

Magicians can, by the agoncy of certain minorals, produce meteorological results, which, though securing to be miraculous, are, nevertheless, natural. Such as a misture in mountain covernor of alum and nitre, which, becoming ignified, emit a molden closel, which, on penetrating to the middle region of the atmosphere, is then discloselyed into rine.

There are many instances quoted, and worthy of endit, of the panie of victory having been often described using red to men. Olleras by major at because a singuished warrier amount in Sweden, and was looked upon as divinity, if we credit Saro Grammatiens, who thus writes of Olds, the Danish plrate. Without a skip, wandering our the ocean, he often defected hostile feets by rousing by his charms the fuzy of the elements against these seemins of the norestant and agriculturier.

Of the meanballs victory of the Tutans over the Polos, Cumerae writes in the following weeks:—In the your 120s of the Unition or, the Polos gave balls to the Turner near Legion, benche their inset yet their inset principal charge, and drove them to flight, pressing closely on their rans. In the outmost rank of the Turner has caused the calculation and the responsable for the display of the figure and cent of the barrer, the contract of the principal contraction of the princip

It has also happened that elever men have employed the marvellous to escape from a critical situation, by imposing on the people. The following instances are from Kircher, in his 'Artis Magnæ Lucis et Umbræ':—

I know that many of our fathers have been rescued from the most imminent dangers amongst the barburians of India by such inventions. These were east into prisons, and whilst they continued ignorant of any means of effecting their liberation, some one, more cunning than the rest, invented an extraordinary machine, and then threatened the barbarians, onless they liberated his companions, that they would beheld in a short time come axtraordinary portents, and experience the visible anger of the Gods. The barbarians langhed at the threat. He then had constructed a dragon of the most volatile paper, and in this he enclosed a mixture of sulphur, pitch, wax, and so artistically prepared all his materials, that, when ignited, it would illumine the machine, and axhibit the following legend in their vernacular idiom, The Asper of God. The body being formed and the ingredients prepared, he then affixed a long tail, and committed the machine to the heavens, and, favoured by the wind, it source aloft towards the clouds. The exectacle of the dragon, so brilliantly lit, was terrific. The barbarians, beholding the named motion of the apparition, were smitten with the greatest acconishment, and now, remembering the threatened anger of the Deity and the words of the father, they were in fear of expining the punishment he had prognosticated for them. Therefore, without dalay, they threw open the gates, they suffered their prisoners to go forth in peace and onjoy their freedom. In the mean time the fire seized on the machine and set it in a blaze, and with an explosion, which was interproted as an expiring declaration of satisfaction, it, apparently of its own secord, vanished from eight, as if it had accomplished its unpernatural mission. Thus the fathers, through the apprehension which this natural manifestation inspired, obtained that which could not be purchased with a large amount of gold.

Froissart tells us that, a.o. 1933, the Count of Bourgogne, visiting to capture a citaded near Naples, a magician came to one of the nicks of his anny, and promised to take it by means of a cloud, that would serve as a bridge, on which his soldiers could stand and descend to the summit of the walls; and that the besieged would be so alarmed, that they would surrender at discretion. He talked in such a strange way that he was looked upon as a man possessed by the devil; and when the particulars were detailed to the Count, he ordered him to be put to death.

<sup>\*</sup> Note by Borler. " Dar la mison que le see attire l'humide et qu'une semblable noie rersposée de parties révortes et matéries, dell révortes et de le toute l'humidité de l'air cerimennant ri que bleniet, grafiée et comme engreuses par les commans d'air qui vienneut se jeter dans elle, et les coordennes, et sequirit une pomniter qui della facture du revisabler,"

In two histories by Jef le Ministre and De Colonia, of the town of Lyons, the following account is given :-

Towards the end of Charlemagne's reign, certain persons who lived near Mount Pilate in Switzerland. knowing by what means pretended sorcerers travelled through the air, resolved to try the experiment, and compelled some poor people to ascend in an aerostal. This descended in the town of Lyons, where they were immediately hurried to prison, and the mob desired their death as sorrerers. The Judges condemned them to be burned; but the Bishop Agobard suspended the execution, and sent for them to his palace, that he might question them. They answered, "Qu'ils sont du pays même, que des personnes de considération les ont forcés de se laisser conduire, leur promettant qu'ils verroient des choses merveilleuses; et qu'ils sont veritablement descends par l'air." Agubani, though he could not believe this fact, gave credence to their innocence, and allowed then to escape. On this occasion he wrote a work on the superstition of the time, in which he demonstrated the enconfeits of risise in the circ that it is an error to believe in the nower of marie; and that it has its existence in the credulity solely of the people.

It was during the pontificate of Boniface VIII. that the miracle of Loretto occurred. The house inhabited by the Virgin immediately after her conception, had been converted, on the death of the Holy Family, into a chapel, and St. Luke had presented to it an image, carved by his own hands, still known as our Lady of Loretto. Some angels, chancing to be at Nazareth when the Saracen conquerors approached, fearing that the sacred relic might fall into their possession, took the house bodily in their hands, and, carrying it through the air, after several halts, finally deposited it at Loretto, in Italy .- Deserch's Intellectual Development of Europe.



- B. A Sportt raised by the Witch C. A Friar resong his Impe.
- Let warlocks grize, an' wither'd bags Tell how wi' you, on ragwood ange,
- They skim the muirs an' dizzy crags W? wicked sreed And in kirk-yards cenew their leagues Oure howkit dead,-Brays.
- A Fery King A Witch release on the Berill through the Are
  - An Inchested Cartle

We come next to an eminent Englishman, Roger Bacon (born at Ilchester, 1214), who, for his genius and ability, was styled the "Admirable Doctor." He is the first to whom we are indebted for an approximation to the true principles of Aerostation. We here borrow the words of Wise (the American historian of Aerostation):—

Ill a rectu apon razion nelpicto, and displayed in all a great power of imagination, with an equal degree of caterprise. The touchedge be possessed, and the theories he fall down, appear them or remarkable, because the here, within the host banderd years, realized several of his most magnifectar schemes. Like Franklik, his ideas and inneviselyse were three or four centuries anded of the age he between its results and inging the sets or, are least, the principle by which it is accomplished, severa to lever here no will anderstood by him, that we say persiste the contraction of the contraction of

In one of his works, be decents, in glowing language, or the possibility of contracting engines of immenses size and power, that could traverse be lead and the vest will price is qued, and curry with them persons and merchandless. He then goes no to describe a plan of savigating the size. He assumes that the atmosphere is a material of some members, explosed feedings upon in anyter vessels, the higher above are considered of the size of the savigation of the size of the

After expressing himself so confidently upon the "hollow globe" method, he thinks, "There may be made some flying instrument, so that a man sitting in the middle of the instrument, and turning some succhanism, may put in motion some artificial wings which may best the air tiles a hird flying.

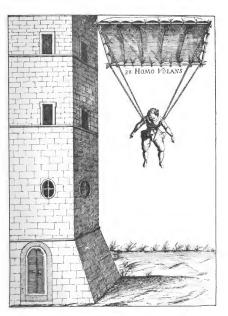
To those descriptions of Bacon, some of an undern writers have adverted with greater sed than indigenous to prove that the art of firing by human contrivance was known to the audients, or at least, america to the discovery of the Managadien. They contend that Reger Bocon was well enqualised with the properties of the atmosphere. Some very learned disquisitions have been written to prove that this delevatair and dipoid for were the same as our randoul at an analysis of the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as our randoul at a same and the same as

With all due deference to the hellicat genius and fact-enching intellect of Regar Boon, it must all be written from his own writings that he did not fully moleculated the principle of stronpolarie persons; or he would not have thought in accessary to get his "hallow globs" on the surface of the atmospher. As the hindwing sents horselenged of the consistency of the airs and saids all, that will not be cheined, for, at the princip thring sents horselenged of the consistency of the airs and saids all, that will not be cheined, for, at the part of the strength of the consistency of the airs and said distinct the said and th

The discovery of the art of making gaspewder has been strillands to Bayer Bacon, and history makes it criticals that he accomplished astending langing in the day, for we read that he was essent of bolding committies with the abrill, and that the person of the writings was interdicted by an order of Nuclea TV, the temporar and his courtiers. Soon dark bloom't time, projects were instituted to making a soon their datasety in the exercise of friging with satisfield wings, which sound to have been the favorine plan of the friging pholopherm and strint of their day, if we can this associated so are of other experiences, it would some that executed so can be of their experiences, it would some that excellent and excellent and the string and their of the string which were the searches of the earth with a great deal of seas and orderly. This was exemplicible by the which were the searches of the writing and the first against the size of the best of the string and with increasible part of the writing and the first against the great, they were evaluated to now along with a nothing motion, and with increasible part of the proper of the writing and the first against the great, they were evaluate to now along with a nothing motion,

'Notes and Oueries' of September 5, 1864, contains the following interesting answer to a

<sup>\* &#</sup>x27;Enistole Fratris Rogeri Begonia, de Nocretia operibus Artia et Nature, et de Nullitate Magia.' Paris, 1542.



These asserming had set the Ordinance Survey Office Smithwaydow make the superintendence of top "Wildelman house #2, Fed Six H. house #E F.R.S. Six University

query, the substance of which is given in the extract of the letter of 1607, that had been referred to:-

The passage, supposed to relete to a discovery of acrostation as early as 1607, is very short, and for the sake of clearases may be here repeated:—

"The greatest never of this countrie is of an ingenious fellow, that in Barkeshire sailed or west over a feet zer, 1007, the steeple in a loat, all of his owns making; and, without other help then himself in her, conveyed hor above twenty unlies by land over thill and ables to the river, and so downs to London.

Kow in 1600 the celebrated Universities (Nicolas Under Fairs' in Prizero) came with the Prench Anhaesader to England, war gardensity reviewed by Killy James, and having gone to Griefla, and viside Gamela, Sir Blocker Citte, Sir Harry Savilla, and other Hierary near, went ever to Helland. While there he travelled not Severhing for the purpose of social parallel galaxies (ladely made under the direction of the echoleside anthaesation and mechanist Shoun Shevittan. Phirotelias was much strong with the invention, and, according to Gonzolac V Vinwhile was very tear received by those in the charit, for the versu for for to the wind inflate. They are pair when

"Commemorare solebat stuporem que correptus fuerat, cum vento translatus citatissimo non persentiscere tamen, nempo tam citus crat quana ventus."

Privacins describes the millag chariot as going from Secveling to Putton, about forty-two English miles, in two hours. Another contemporaneous writer, Waldenia, describes the carriage as carrying size or ten persons in distance of twenty or thirty Gromas miles in a few hours, with far greater speed than the swiftest ship on the rea, being counterly under the cave command of the man at the helm.

It is known that Peirsecius was obliged, by family effairs, to return to Paris in September 1606; and thus the striking invention, or possibly application of a kind of locomotive used before in China, and even in Spain, would be made known to his literary and scientific friends in France and in England.

Grotius celebrated the ingennity of Stevinus in two epigrams. The fifth epigram contained in his 'l'oematu' is as follows:-

"Imposit plaustro vectantem carbasa navim? An potius navi subdidit ille rotas? Scandit aquas navis: currus ruit arre prono; Et merito dioss, "Ilso volot, illa natat."

In his fifteenth epigram be paye a graceful and elegant tribute to Stevinus, after the Roman fashion, a reference being made, in the second line, to the celestial constellation, Argo Navis;—

"Ventivolum Tiphys dedunit in sequora navisa: Jupiter in stellas etherasuque dossum: In terrestre acisum virtus Saevinia: naun nec, Tiphy, toum furest, nec Joris istud epus."

The success of the experiment in Holland at least as early an September 1600, was likely to produce instance in England as early an September 1007; and "their ingentions follow in Matchain" appears to have been one. He earnyst "a beat all of his owne making," "above twenty miles by least, over hills and dales,"—upon one of which hills be might well be over; or above, "a high steeple" in a dale—and so arriving at the river, might proceed to Loroiso by water is his boat, detached from its temporary when the

That is possible for a wheeled carriage driven by salls, to poss over unoverage round, was experimentally proved shout the year 1620, when such a carriage twelveld sole the year for the traphic-sol of micro fact clusterford to Normancka, distance of shoot fifteen miles, ever some considerable hills, at the rate, it is said, of shoot thatteen miles as how. The write of the regly we set the salling corrigin in motion or Normancka Health. It was called as a longer of the region of the sall of the

It would thus appear that the above passage has probably no reference to elevatation. If such a discovery had been made at the beginning of the seventeenth centrary, it never could have been boat. We should have found allusions to it in Bp. Wilkins's Discourse concerning the Possibility of a Passage to the World in the Mona, 1423, and in his 'Mathematical Magic', 1645. "Xe, while that during and most original thinker describes

as larged Stevinus's sailing chariot, and discusses servend means by which flight might be affected mechanically, be makes no mention of a balloon, or any similar means of rising in the air. He does not appear to be exquainted even with the theoretical notion of his contemporary, the Jossiti Laca, who preposed to extanset hollow balls of meeta, and thus to resolve them specifically lighter them the atmosphere, forgetful that such balls would be enumbed by the commons pressure of the external air, management by a find with any

Wilkins, Bishop of Chester, who died in 1072, had read many of the foregoing quotations, and write a work named 'Duchalist', Neckanisal Moltons, in which be embodies the sentiments and principles of Roger Boson on this subject, giving, however, quantiter illustrations, to show that the atmosphere is nortgable. Mus now everel by attempts to imitate the flight of birds, and from a lack of empirical knowledge with regard to the laws of heat and gases, which renained an enigran till revealed by the experiments of Friesdey and Carondials, about the middle of the eighteenth century. We may been notice, that "in training the progress of houseledge in relation to atmospheric houseness, it coldsite to the mind a very striking exemplification of the neurons with which we may approach to the deleted depict of our parasits, and yet, for the scent of knowing correctly the application of a trifling part of it, how long we may be lagled in perfecting our schence."

Bishop Wilkins thus succinctly speaks of the several ways by which "flying bath been or may be attempted" :—

- "1st. By spirits or angels.
- 2nd. By the help of fowls.
- 3rd. By wings fastened immediately to the body. 4th. By flying chariots."
- 4th. by nying charlots.

This appears much the order in which we read of them in history.

"By spirits and angels," Instances occur in the Bible; and, if we could believe

spiritualists, this is again revived.

"By the help of fowlg." As related in Persian and other Oriental tales; of which the

"By the help of lowle." As related in Persian and other Oriental tales; of which the following is a good sample, from a manuscript in the British Museum:—

"Translation of the relation of the Aerial Voyage of Kai Kacos, King of Persia, the Cyaxares of the Greeks, from the Persian of Ferodoseo, the Shah-Nameh, or King-Book, written in the tenth century."

"To the king it became a matter of great concern how he might be enabled to ascend the heavens, without wings; and for that purpose he consulted the astrologers, who presently suggested a way in which his desires might be successfully accomplished.

"They contrived to rob an Eagle's nest of its young, which they reared with great care, "supplying them with invigorating food.

"A Frame of Aloes-wood was then prepared and at each of the four corner was fixed prependicularly a javelin, summounted on the point with the flesh of a goat. At each corner again one of the eagles was bound, and in the middle the king was seated with a goblet of "wine lefore him. As soon as the eagles became lungry they endeavoured to get at the goat's flesh upon the javeline, and thy flapping their wing, and flying upwarlas

<sup>\*</sup> Wast, 'History of Accumutios."

- "they quickly raised the throne from the ground. Hunger still pressing on them, and still being distant from their prey, they ascended higher and higher in the clouds, conveying the
- "being distant from their prey, they ascended higher and higher in the clouds, conveying the
  astonished king far beyond his own country. But after a long and fruitless exertion their
- " strength failed them, and unable to keep their way the whole fabric came tumbling down
- " from the sky, and fell upon a dreary solitude in the kingdom of Chin :--where Kai Kaoss
- " was left a prey to hunger, alone, and in utter despair."



Kai Kaoos, THE PERSON KING

The tales of the Roc in the 'Arabian Nights,' and also the wondrous Ganzas, are familiar to us, and, only a century ago, were still believed in England."

Automata were then devised, and the human mind speculated for centuries on "fastening upon the body"; or even, like Archytas in the fourth century before the Christian era, in making a dove. Two or three instances will suffice.

\* Cordan and S-siliyer doe on minimumly affirm, that there is a blick around it is brailed often med to make a sheeth or webland for a sevent. And, foreste take us of a four in Free called Constere, which will of the members kill and cut up a whole call it a time. Nor is there any researwhy any other body may not be supported and enried in the sizthough it should as much extend the quantity of those first a thep.

do the quantity of a file. Maceus Polus mentions a ford in Madagueur which he calls a Bark, the funders of whose wines are 12 poses, or direcessor foot long, which can with an amely near core up an elephant as our kites do a mono. If this relation were asything enables, it night serve as an alemant pro-6 for the present quere.——Winners, Bobep of Cheefer, June The related of a certain English monk (Elmerus) in the reign of the Confessor, that he did by such wings (fi from a tower adreve a furlog; and so under from St. Mark's steeple at Vente; and Beslevquis speaks of a Turk at Constantinople who attempted something this way. Burton (in his' Anatomy of Melancholy'), mentioning this quotation, doth believe that some new-fingled wit (it his is cyclish pleras) will some time or other find out this art. In the legimining of the tenth century an Italian adventurer visited Scotland, during the reign of James IV, and, being a man of some address, and at the same time a pretender to abelenay, be contrived to insinuate himself into the favour of that gay and needly prince, by holding out howes of aumenting his scornt treasurery to the accusition of the addisocolor's stone.

He was collated by royal favour to the abley of Tungland (or Tungland), in Galloway; but, not having succeeded in creating artificial riches, he resolved, in the height of his cuthusiasm, at once to gratify and astonish the courtiers by the display of a feat still more extraordinary.

Having constructed a set of ample wings, composed of various plumage, be undertook to by through the air from the walls of Stirling Castle to France. This experiment he had actually the fully and hardinood to try, but soon came to the ground, and broke his thigh-leane by the violence of the fall. For this unducky failure, however, the ablot had the desterity to draw a very plausible excuse from the wretched spolistry termed science, in that age.

"My wings," said the artful Italian, "were composed of various feathers. Among them
"were the feathers of dunghill fowls, and, by a certain sympathy, were attracted to the
"dunghill; whereas had my wings been composed of eagles' alone, the same sympathy would
"have attracted them to the region of the air."

Like attempts were made at Tubingen and Vienna; and, in the reign of Louis XIV., the noble terrace of St. Germain en Laye witnessed the rope-dancer Allard's endeavour to fly neross the Seine to Vesinet; but, falling at the botton of the wall, he broke a limb.

Roper Boxen, Laurent Laurus, Schottus, Cardan (already quoted), and Scaliger, gave comtenance to anch experiments; and it was not till Bernli published, like olderined work, De Motu Animalium, in 1676, showing by accurate calculations the prodigious force which the pectoral muscles of birds must exert and maintain, that these projects were shardened, except by a few. The most remarkable of these attempts appeared in the "Journal des Savans," 12th September, 1678, when a Mons, Bessier, of the province of Maine, tried the excriment, represented in the following woodcut:—



"Ces ailes sont chacune un châssis oblong de taffetas, attachéea à chaque bout de deux bies que l'on ajustait sur les épaules. Ces châsses se plinient du haut en bas comme des battant de volets brisés. Ceux de devant étaient remués par les mains, et ceux de derrière par les picies, en tirant chacun une ficelle qui leur était attachée."

The inventor did not pretend that he could rise from the earth, or sustain binned floug in the ari with them, from the inability to give his apparants the required power and rajidity; that he availed himself of their aid in progressively missing timuself from one beight to another until he reached the top of a house, from the roof of which he passed ever the neighbouring houses. By thus kawing an elevated position, he could cross a river of considerable levenskil, or any other obstacle. His first pair of wings were purclaused by a Mr. Baldwin, of Gulbre, who, it is said, used them with renarrables necess. An finally Blanchent, of whom we shall hear more hereafter, wrote thus to the 'Journal de Paris':—" Je rends done, à l'occasion de sa première assension est alblion and Champde-Mars, be 2 Mars, 1784, un hommage pur et sincère à l'immorted Montgolifer, suns le secours daqued Javono que le mécanisme de mes ailes ne n'aurait peut-tier jamais servir qu'a agieter un élement inducité qui m'aunti obstinément reponses sur la terre comme le lourd antruche, moi, qui comptais disputer à l'aigle le chemin den mes."

We again quote from Mr. Wise:-

The philosophers, from Bacon's time down to the discovery of the true nature of atmospheric pressure, as illustrated by the Torricellian tube, and air-pump, in their speculations upon serial navigation, all had an ordinion that the atmosphere had a defined limit or border, not very high shove the earth, upon which the aerial vessel must necessarily be placed in order to have it broved up by the air underneath, like the water under a ship. Reasoning from their knowledge of hydrostatics, they took it for granted that the atmosphere was a vast occan of air surrounding our globe, upon the outer border of which rested another ethoreal ocean of a nuch rarer kind. separate and distinct as the air rests upon the water. Still they approached nearer, in each succeeding generation, to an attainment of navigating the air. Judging, then, from the scanty knowledge they passessed of pneumatics, and indeed of all the sciences, they are entitled to a great deal of credit, in regard to the art of serial navigation, as also to other important subjects. It does seem that, if the progressive individuals of our generation were to apply themselves with the same carnestness to this subject now, that those did before us whom we have made reference to, it would not be long before we should see air travelling as much preferred and in advance of steamboat and railroad travelling, as the latter are now in advance of the old-fashioned stage-coach and schooner method. In the course of our history, we shall see that the discovery by the Montgolfters created a spirit for its advancement so far beyond a legitimate end, that we may ascribe to it much of the spathy that has fellowed it. At the present time, there is, however, a new and sobor determination growing up again in the way of improving this neglected art.

The great interest that was manifested in the secretarily century from the numerous operiments that were gainge on in every evident leaved in the first barragist min to find many able writtens on this neighbor, which some revived all the knowledge and history of the part, and cruwled a first standard to the investigation of all subjects that had up being on, or relative to the interpretated of social templation. Hypothesial marration had now that had up being on, or relative to the interpretated of social templation. By the standard marration had now which the standard of the standard marration and the standard marration and the standard marration and the standard marration and the standard marration when we restrict to as the origin one gainst the bisect the progress of the arts, and thus the void of appropriate of a barger rever the experiments of non-supplied learning. In reconsider of the class position of a small contract of the standard contraction of the standa

Francis Lans, a lomit, and a very judicious writer, deduced from the new discoveries the real nature and pressure of the atmosphere, and is the first who calabilised a theory verified by nathematical accuracy, and clearness of prevention, which placed him far in advance of his profescensor in the science of arisin assignment, and the very truly inferred that a vessel exhausted of air would weigh best than when full of that fluid. It shows in his professor has professor that the restriction of the professor in the professor that the restriction of the professor in the professor is the professor of publisher works increase much faster than their strategy. example, you glimbire vessels, one of ten foot disasters, and another of twenty foot disaster; the first will have equipty of 2.25 where for tend a function over, which we drive mid- three vertex ends for the surface of the larger is four times that of the smaller, while its equety; or contents, is eight times as great. This is a very important consideration in the construction of hellocan. Thus, a falloon that would carry one person, would weight one builded pounds, which is about the weight of such a one, and would con between 60, and 50%; one expands of earrying two persons usuall not out meet than between 60, and 70%, and would not weight now the contract of the contract of

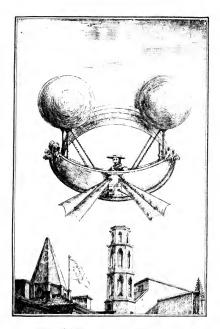
Lais proposed to prepare four hellow globes of oppur, such twenty feet in distinctor, and so thin, that they would wright hear in an equal bath of atmosphere, when they were enhanced of air. To these global beingled floating a bash, in which the accessor and his appendages were to be stationed, for the purpose proper of the proper of th

The barounter, by which the pressure of the attempher is secretained, was discovered in 14th. The weight of the six a sown by the Terricalista in the, being shot fiftee possiba to every quartic soft or strice, we no doubt the orimulas to Lamis proposition of the copper globes. His work, entitled 'Problemo dell' Arte Months Hervis,' in which he describes his another, appeared in 15ty, while the simpreny was not invested, or at least to investion not make known, until the year 1612. The goat pressure of the six, as shown by the baronnets; without a knowledge of its specific gravity, would very namely indoors a steller that it possessed a small generate weight than it rarply has, which is not and two tenth onness to the calls for. If lid Lana known of the impactualisability of his machiner,



JEST I FATHER LANA'S PROPOSITION.

 $\Lambda$  letter dated Lisbon, the 10th of February, was published soon after in some of the scientific journals of Paris, containing with it the copy of an address presented to the King of Portugal, in the year 1709, by



trees made the improvement over at laye" Willeldman hours E.C. Led Six Wikessers E.E. F.E.S. Sec. Descript

a friar called Barthelemew Leavence de Gueman. In this the petitioner represents himself as having invented a fring machine, capable of carrying passengers, and navigating through the sir vary swiftly. He also request the privilege of being the sole possessor of the invention, edining a petablistic against all nod every persons from constructing a similar machine under a severe penalty. Upon this the king issued the following order in his favour:—

"Agreeably to the advise of my council, I order the pain of death against the transgressor. And, in order to encourage the suppliant to apply hisself with seal towards improving the machine which is capable of producing the effects mentioned by him, I also great him the first Professorbity of Mathematics in my University of Coimbra, and the first vacancy in my College of Barcelona, with the annual pension of 600,000 reis during his life.

" The 17th day of April, 1709."

It is said notwithstanding that, through the influence of the Inquisition, he was thrown into prison.

Father Galien, of Arignon, published a work called \*L'Art de Navigner dans les Airs in 1755, when the force of general appentation, that call imparted all flights in the sir to demons or magicians, obliged him to qualify it with the additional fittle of \*Annasement Physique et Géométrique.\* It contained a wild scheme of ascerding mountains, and earbesing the light ethereal air found at such altitudes, in constructions of canaxo are cottes; while the machine he had the boldness to project and minutely describe, was about ten times the size of Noal's ark, and could have liftled the whole town of Arignon, where he resided.



Tes: Postpores: Experiment,

### THE FLIGHT OF IMAGINATION.

The high-born soul
Disabins to rest her beaven-aspeiring wing
Becenth its native quarry. Tired of earth
And this diurnal scene, site springs aloft,
Through fields of air: pursues the flying storm;

Eides on the volleyed lightning through the heavens; Or, yelred with whichwinds and the northern blast, Sweeps the long tract of day. Then high she sears The blor perioned, and hovering round the son, Beholds him pouring the redundant stream Of light, blooks his merchenite, any fiscular historic blacks to disave. The fault rounds of Time. There for efficient The fault rounds of Time. There for efficient Scheduler was sufficient to the strength of the there is the strength of the strength of the there is the strength of the strength of the there is the strength of the st

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Nea positions the cereal depth show: "This Aff resolling, both shoulding steep up the planger; soon development of extulineed up the planger; soon development of the plane. There has beginned to the plane of the plane of the plane. The plane of the plane. The plane of the plane. Note that the plane of the plane of

-MARK ARRESTOR, 1744.



THE ART OF PLYENS BUILDING UP.

# CHAPTER III.

## 1783-5.

THEPMEONE; OR, MONTGOLFIÈRES AND CHARLIÈRES, AND THE TWO YEARS OF UNINTERRUPTED SUCCESS.

Mentgolfer nous apprit à ceier un nonze.
Son griele étennant, mais lineil que suy.
Sons un immense voile enfermant la vapeur.
Par sa capsulé dérinit la pesanteur.
Notre undece, bientife, en saura faire unaç.
Note undece, bientife, en saura faire unaç.
Note somettecne de l'air le nobile édiment,
Est des champs auroide le pfrilleux voyage.
Ne nous paraîties plus qu'un simple annuacente.

THE MATERIALITE FAMILY—THE SEVENDE AT ANDALY—THE SOUTHTHS OF THE "HERRY," AND THE SHOWLAN OF MISCONDERS OF WATER—THE CHROMOTORY OF WATER—THE CHROMOTORY AT PARE—A THE CHROMOTORY OF THE SHOP CHROMOTORY—THE SHAPE CHROMOTORY—THE CHROM

The inventors of the acrostat will be for ever remembered. Their family history is also of much interest. The Metgledfers seen natives of the small town of Ambert, in Asvergent, At the close of the hat entry there was still seen on the slope of the hill that overhange the toron the ruins of the ancient residence of the Montgolfer family; and they either gave their name to, or took it from, the surrounding country, as may be noticed in the old map by Consini.

The oldest paper manufactories in France were established at Thiers and Ambert. The invention of this manufacture dates from a remote cpoch; for in the time of St. Louis, the East, especially Damaseus, supplied the world with paper. St. Louis neutions this in his letters to Joinville. Paper was then made from cotton, and was called "Carta Damascena."

There exist in the archives of the province of Auvergne, acts that speak of a paper manufactory at Ambert, in 1386. To its citizens belongs the glory—more especially to one Montgolifer (whose name signifies the Master of the Mountain)—of introducing this manufacture into France, on their return from the sixth, and last Crusde, when, according to historians, a great number of "Auvergnata" were made prisoners of war. During that long captivity they had become acquainted with the manufactories of Damascus. Soon after setting up the mills in their native town, they found rags were as good for the purpose as the new cotton exclusively used in the East.

From the annals of Ambert, it appears that a Montgolfier was the "barege," or mayor, of that town in 1440.

Paper at this time was only used for writing; but the invention of eards, in the reign of Charles VI., increased its consumption,

Michel Montaigne speaks of this manufacture when passing through Thiero on his return from Intly, "Il y a aniant de façona is cela, thicli, qu'à une autre bonne besogne; les cartes ne se vendeut qu'un sou les commuues, et les fines deux." Later, when printing (that triumph of written thought) was discovered, the manufactories of Auvergue found a new demand for their products, and flourished accordingly.

In 1533, when Luther and Calvin proceded, a great number of "Auverganas," and among others Morgidier, arbeitly embraced the reference Prigion. The Montgoiffer of this generation was one of the most zealous Protestants, and, at his own expense, he sent to Genera for ministers of the Gospet. His zeal brought on himself and his family a rigorous persecution. After the Massers of St. Burtholomers (1572) his goods were conficiently, his paper naumfactories destroyed, and he was obliged to fly. Montgoiffer, with his family, took redge in the momatian near Lovas, where he again introduced the manufacture of parer.

Towards the end of the seventeenth century there lived at Vishlon, near Annonay, at the foot of the nonutations of Visarias, a wealthy owner of a number of windmills, named Antoine Schelle. He had two daughters. Jean Montgolfier, paper mannfacturer, of St. Didier aur Boujen, asked them in marriage for his two soon, Michel and Raymond. This double union was evoletared in January, 1003. The windmills were transformed into paper mannfactors, and, under the diversion of the torthern Montgolfier, these establishments became important, and at length attained the rank of a royal mannfactory. In consequence of these marriages the greater part of the Montgolfier family came and lived at Annonay, Raymond Montgolfier had a large family, and among them Pierre Montgolfier, who was the father of the inventor of the Acrestal. He had already received many teleur of approximation from Louis XVI, when the brilliant discovery of his sons—to be mentioned presently—crowned his largeliness.

The poet Boissy d'Auglas says of him :--

#### La gloire l'environne, et ses cheveux blanchis Nembellissent excore des lauriers de ses fils.

The following letter-patent, which in chronological order should come in a little later, here shows the estimation in which the family was held:—

Lettres-patentes données par le Roi Louis XVI: du nom, au Sieur Pierre Montgolfier, Decembre 1783:-

Lovis, by the grace of God King of France and of Navarre, to all present and to come, greeting:

The acrustate machines invented by the two brothers, the Sires Elicano-Jacques and Jacque-Michel Birther Street Elicano-Jacques and Jacque-Michel Elicano-Jacques Mangalder, and those that have followed, have bed such success, that we have another that this invention will cause a measurable epoch in physical history; two hope also that it will furnish new means to increase the power of same or a measurable epoch in physical history; two hope also that it will furnish new means to increase the power of same, or at least to extend his knowledge.

Persuaded that one of our chief daties is to encourage persons who cultivate the sciences, and to show the effect of our good withes to those who succeed in enriching them by happy discoveries. We have thought that this ought more especially to draw our attention to the two callightened naturalists who share the gloop of the discovery.

We have bount that the Sire "Viers Montgolfer," their failer; is of an accinet and honorable family, and that having received from his accessors a spear monafredry situated Amazuny, in Virusa, he has reduced it by his care and intelligence one of the most important in the kingdon, so that 200 people see there employed. We are also informed ant the sized Sire "Proc Montgolfer" was the fort a male Vellenn Prey, and that it will the State of Langerdon, whiching to insiste the Duch manufacture, interests to him the commission. If which the state of Langerdon, which is many manufactures requisit has production. These elementatives reveloped are sense to make a district, that many manufactures requisit has production. These elementatives relating the satistity, and their thatm, one hope to receive the next finaturing and distinguished honour was or also to accordtant of being missed to be righted and precedency of the solability. But what he next out to be best in it as one of the Sire "Perer Montgolffer" is, that it may be (both) a reward worthy of the Isloors of the feders and of the bandful discovery of extractive mathlers, earlierly weigh to the backdops and recentred with his two some.

For these cases, by our especial grace, full power, and royal authority, we have moduled, and by these powers signed by our hand de cannide the anil Sin we "have hanginglier," and we have homoured and to homour him with the tilt of Spitter; and we wish and it phease as that he is cannided and addressed, as we have consider and addressed, make him, Spitter, with the addressed of the man and to be born in legitimate marriage; that they may like him at all thices and in all places be readed as equiver, and be maded be arrived as all degrees of chairly and other disputines; tilture, and qualities, reserved for emtailing that they shall be limerisked in the list of squires, and that they shall enjoy all rights, privileges, and remeasities, that are served to them.

Par le Roi.

Le Baron de Breteur.

\*\*

(Signed) Louis.



shout of joy rang through Europe, and reached the ear of the aged Euler† on the banks of the Neva, who, between attacks of verificy, which were soon to carry him from this scene to a better, dietated to his sons the calculations he had made on Aerostatical Globes. It is said he ceased to calculate and live at the same instant.

The cause of so great enthusiasm had better be given in the accurate description that immediately circulated among the peoples:—

On Thursday, 5th June, 1783, the States of Vivarais being assembled at Anneasy (36 miles from Lyons), Mesers. Montgolfier invited them to see their new acrostatic experiment.

Imagine the surprise of the Deputies and spectators on seeing in the public square a ball, 110 feet in circumference, attached at its base to a wooden frame of 16 feet surface. This enormous bag, with frame, weighed 300 lbs, and could contain 2200 feet of vapour.

<sup>&</sup>lt;sup>8</sup> Depuis Defeour's Historie (Accounts).
\* Earler (Locatal), bern at Blad 180Å April, 1767; Professor of Mathematics; Member of the Imperial Acceleage of Ni, Petersburg; Andreis Director of the Royal Archivary at Peting, 1828, and Convergencing Mumber of the Beyla Archivary at Peting, 1828, and Convergencing Mumber of the Beyla Archivary of Prance; the author of the surp works; side Spec. 1783. Condensed vary—\*\* Berlar was one of those men whose genius was equally supplied of the greatest effect and of the most continued below; who multiplied has productions and of the most continued below; who multiplied has productions.

beyond what night here here expected from James attempt, and who, note bitanating, was original in ord; who we have not subvaried, occupied, and his mind always calas. The nature of his permits, by withdrawing him from the work, powered that simplicity of nanaers for which he was originally included to his clusteries and the clusteries, and he employed none of those means to which nore of real most have sometimes recurse in order to enhance the impartance of their discortine."

Imagine the general astonishment when the inventors amonunced that, as soon as it should be filled with gas (which they had a simple means of making), it would rise of lived to the clouds. One must here remarks, and the contract of the co

But Meser, Monigodier taking it in hand, preceed to make the vapoors, which gradually swell is not till senseme a beautiful form. Strong arms are now required to retain it; at a given signal it is loosed, rises in rapidity, and in ton minutes attains a height of 6000 feet; it proceeds 7668 feet in a horizontal direction, and gently falls to the ground.

Just as the Omnipotent, who turns The system of a world's concerns, From mere minutic can chose Events of the most important use; But who can tell how year the plan, Which this day's incident began?

The effect of this letter in England was to cause a display of justosey at which we might now blush, if we do not remember that the suggestions and carvincing views of Adam Smith on Political Economy had only just been published, and had not yot had time to circulate; for, though we were deliged to admit a discovery had been made in France, yet the periodical argued that all the experiments that had led to it were made in England. Many were the cardiaruns which appeared, as will be noticed in a subsequent cluster.

Brisson, în his 'Dictionnaire Raisouni de Physique,' says, "Je ne fais que répêter, ce que le citéçen Montgoffer m'a affirme lui même lorsqu'îl est venu à Paris anunocer sa découverte, la citéçenne Montgoffer, ayant place un jupon sur un de ses paniers d'orier à claire-voie dont les femmes font usage pour sécler leur linge, le jupon fut clevé jusqu'an plancher. Cest de ce fait que sont partie les citeves Montgoffer.

In a discourse at the Academy of Lyons, Montgolfer says that a French copy of Friesdey's 'Experiments relating to the Different Kindo of Ar' came in his way, and was to him like light in darkness; as from that moment be conceived the possibility of navigating the air, but, after some experiments in gas, he again tried smoke and hot air. This year, 1783, is not only unsomable for this invention of the Montgolfers, but also for the institution of the "Devly", and for the still more important discovery that Buckle, in his 'History of Civilisation,' thus relates:—

The only discovery made by Watt, was that of the composition of water. Though his claims are disputed by the friends of Cavendish, it would appear that he was the first who ascertained that water, instead of being an element, is a compound of two gases. This discovery was a considerable step in the history of chemical analysis, but it neither involved nor suggested any now law of nature, and has, therefore, no claim to mark an epoch in the history of the human mind. There is, however, one circumstance connected with it which is too characteristic to be passed over in silence. The discovery was made in 1783, by Watt, the Scotchman, and by Cavendish, the Englishman, neither of whom seems to have been aware of what the other was doing. But between the two there was this difference,-Watt, for several years previously, had been speculating on the subject of water in consexion with air, and having, by Black's law of latent heat, associated them together, he was prepared to believe that one is convertible into the other. The idea of an intimate analogy between the two bodies having once entered his mind, gradually ripened; and when he at last completed the discovery, it was morely by reasoning from data which others possessed besides himself. Instead of hringing to light new facts, he draw new conclusions from former ideas. Cavendish, on the other hand, obtained his result by the method natural to an Englishman. He did not venture to draw a fresh inference, until he last first ascertained some fresh facts. Indeed, his discovery was so completely an induction from his own experience, that he unitted to take into consideration the theory of latent heat, from which Watt had reasoned, and where that eminent Scotchman had found the premises of his argumentBoth of these greal inquirers arrived at truth, but each accomplished his journey by a different path. And this antithesis is accurately expressed by one of the most calcharated of living chemists, who, in his remarks on the composition of water, truly says, that while Cavendish established the facts, Watt established the incast.

In Paris this intelligence caused a meeting of squeue, who, by the advice of Mone, Engise de Saint Fond, started a public subscription for defraying the expense of making inflammable gas (hydrogen), the materials of which were expensive: 1000 lbs. of iron filings and 498 lts. of sulphuric acid were consumed to fill a globular lag of varnished sill, which, for the first time, was designated a Bulles; or Bulleon, as we call; meaning a great hall.

The filling commenced on the 23rd of August, in the Place des Victoires. Bulletins were published daily of its progress, but, as the crowd was found to be immense, it was moved on the night of the 26th to the Champ de Mars, a distance of two miles. It was done secretly, and in the dark, to avoid a mob.

A description by an eyewitmen is as follows:—"No more wonderful scene could be imagined than the Balkoo heing thus conveyed, precéde by lighted torches, surrounded by a 'cortége', and escorted by a detachment of foot and horse gunds; the noctural march, the form and capacity of the body, carried with so much presention; the silkence that religand, the unassonable hour, all tended to give a singularity and mystery truly imposing to all those who were unasquantied with the cause. The call-drivers on the road were so satonished that they were impelled to stop their carriages, and to kneel humbly, hat in hand, whilst the procession was pensing."

In the morning the Champ de Mars was lined with troops, every house to its very top, and every avenue was crowded with anxious spectators. The discharge of a cannon at 5 p.m. was the signal for accent, and the globe rose, to the great surprise of the spectators, to a height of 3125 feet in two minutes, where it entered the elouds. The heavy rain which descended as it roed into timped, and tended to increase surprise. The idea that a body leaving the earth was travelling in space was so subline; and appeared to differ so greatly from ordinary laws, that all the spectators were overwhenden with enthusiass. The satisfaction was so great that ladies in the latest fashions allowed themselves to be drenched with rain, to avoid losing skift of the globe for an instance.

The Balloon, after remaining in the atmosphere three-quarters of an hour, fell in a field near Gonesse, a village fifteen miles from the Champ de Mars. The descent was imputed to a tear in the silk.

The effect on the inhabitants of this village well illustrates that the human character with an unawakened intellect is the same in all countries and ages:—

"For on first sight it is supposed by many to have come from another world; many fly; others, more sensible, think it a monstrous bird. After it has slighted, there is yet motion in it from the gas it still contains. A small crowd gains courage from numbers, and for an

"hour approaches by gradual steps, hoping meanwhile the monster will take flight. At length one bolder than the rest takes his gun, stalks carefully to within shot, fires, witnesses

"the monster shrink, gives a shout of triumph, and the crowd rushes in with flails and

"pitchforks. One tears what he thinks to be the skin, and causes a poisonous stench; again "nlt retire. Shame, no doubt, now urges them on, and they tie the cause of alarm to a

" horse's tail, who gallops across the country, tearing it to shreds."

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A similar tale has lately been told me as having occurred in Persia, where a fire balloon was let off by some French visitors to the Shah's palace at Teheran, when it alighted. No less than three shots were fired at it when on the ground, before any one would venture nearer.

It is no wonder, then, that the paternal government of France deemed it necessary to publish the following "avertissement" to the public:—

Paris, 27th August, 1783.

"Accretionment on people" on the ascent of balloons or globes in the air. The one in question has been raised in Paris this said day, 27th August, 1785, at 5 r.m., in the Champ de Mars.

A discovery has been made, which the Govarnment deems it right to make known, so that alarm be not occasioned to the people.

On calculating the different weights of inflammable and common air, it has been found that a balloon filled with inflammable air will rise towards heaven till it is in equilibrium with the surrounding air; which may not happen till it has attained a great height.

The first experiment was made at Announy, in Vivarsis, by MM. Montgolfier, the inventors: a globe formed of canvas and paper, 105 feet in circumference, filled with inflammable air, reached an uncalculated height.

The aune experiment has just been renewed at Paris (27th August, 5 r.m.) in presence of a great crowd. A globe of infictus, covered by elastic gan, 36 feet in circumference, has risen from the Champ de Mars, and been lost to view in the clouds, being berno in a north-easterly direction; one cannot foresce where it will desend

It is proposed to reject these experiments on a larger reals. Any one who shall see in the sky such a globe which resembles "is have obscured"; housd be sware tast, far from being an alarming phenomenon, it is only a machine, made of taffeas, or light carers covered with paper, that cannot possibly cause any harm, and which will know day report serviceable to the wanter of section.

Read and approved, 3rd September, 1783. Dr Sauviony.

Permission for printing.

Balloons made of paper and goldleater's-skin were now sent up by amateurs from all places which this intelligence reached; and in September another important step was made, an account of which, and of the ascents which followed during the next two years, I take from the quaint but graphic 'History of Aerostation' by Tiberius (availle,

Tiberius Cavallo was an electrician and natural philosopher, born at Naples, 1749. He can be England in 1771, where he devoted his time to science and literature till his death, in 1809. In Old St. Paneras churchyard we may read the following inscription:—

Beneath are deposited the Remains of Themsers Cavastary. See nof a Newpolitan hybracina, Who deducated his life. To the attainment and improvement or existency. Fixed his residence in this country, as the chief word for inquiry, Distinguished, ly many useful writines and ingentious inventions, In various branches of

Natural Philosophy, and no less and no less Tas independence of his pranciples. The independence of his pranciples, and the innounce of his life. Uncavied, beloved, and shuffed, By a meritorious circle of friends, Who justly appreciated in him. Those soild, Bot measurementation, qualities That contribute, most caseotially, To the hardeness of manhite.

#### EXTRACT FROM CAVALLO'S HISTORY OF AEROSTATION.

#### Montachter's Experiment at Versailles.

On the 19th September, the King, Queeu, the Court, and innumerable people of every rank and age, assembled at Versailles, Montgolfier being present to explain every particular. About one o'clock the fire was lighted, in consequence of which the machine began to awell, acquired a coavex form, soon stretched itself on every side, and in sleven minutes' time, the cords being cut, it ascended, together with a wicker cage, which was fastened to it by a rope. In this cage they had put a sheep, a cock, and a duck, which were the first animals that ever ascended into the atmosphere with an acrostatic machine. When the machine went up, its power of ascension. or levity, was 696 pounds, allowing for the cage and animals.

The machine raised itself to the height of about 1440 feet; and being carried by the wind, it fell gradually is the wood of Vancresson, at the distance of 10,200 feet from Versailles, after remaining in the atmosphere only eight minutes

Two gamekeepers, who were accidentally in the wood, saw the machine fall very gently, so that it just bent the branches of the trees upon which it alighted. The long rope to which the cage was fastened, striking against the wood, was broken, and the enge ease to the ground without hurting in the least the animals that were in it. so that the sheep was oven found feeding. The cock, indeed, had its right wing somewhat hurt; but this was the consequence of a kick it had received from the sheep, at least half an hour before, in presence of at least ten witnesses.

Aerostatic Experiments is which Men first ventured to accord into the Atmosphere with an Aerostatic Machine,-The preceding part of this history has shown the rapid progress of the subject, and has sufficiently demonstrated by experiments, that little or no danger is to be apprehended for a man who accords with such a machine into the atmosphere. The steadiness of the serestat whilst in the sir, its gradual and grade descent, the safety of the animals that were sent up with it in the last-mentioned experiment, and every other observation that could be deduced from all the experiments hitherto made in this new field of angairy, seem more than sufficient to expel any fear for such an enterprise; but as no man had yet ventured in it, and as most of the attempts of flying, or of ascending into the atmosphere, on the most plausible schemes, had from time immenorial destroyed the reputation or the lives of the adventurers, we may casily imagine and forgive the hesitation that men might express, of going up with one of those machines; and history will probably record, to the remotest posterity, the same of M. Pilistra de Regier, who had the courage of first venturing to ascend into the atmosphere with a machine, which, a few years hence, the most timid weman will perhaps not besitate to trust herself to.

The king, aware of the difficulties, ordered that two men under sentence of death should be sent up; but Pilâtre de Rozier was indignant, saying, "Eh quoi! de vils criminels auraient les premiers la gloire de s'élever dans les airs! Non, non, cela ne sera point," He stirs up the city in his behalf, and the king at length yields to the earnest entreaties of the Marquis d'Arlandes, who said that he would accompany him.

Scarce ten months had elapsed since M. Montgolfier made his first aerostatic experiment, when M. Pilkitre de Rozier publicly offered himself to be the first adventurer in the newly-invented aerisl machine.

> [Yet who but he undannted could explore A world of waves, a sea without a shore Trackless and yact and wild as that reveal'd. When round the ark the birds of tempest wheel'd; When all was still in the destroying hour .-No sign of man! no vestige of his power!-ROURSE.]

His offer was secreted; his conrare remained undaunted; and on the 15th of October, 1783, he actually ascended into the atmosphere, to the astonishment of a gazing multitude. The following are the particulars of this experiment. G 2

The societies which happened to the orrotation melains at Vermilles, and its imperfect construction, induced. Managinglier to contract under membine of a larger size and more sold. With this intent, self-circuit may want loved for the work to be projectly door, and by the 18th of Corobor the secretar was completed, in a garden to the contract of the self-circuit contract with the sign of the mollox, with cyberty and of the operator of the self-circuit contract contract point of the self-circuit contract contract

On Welmaday, the 13th of Orcher, this measurable operiment was performed. The fire being lighted, and the machine infacts, N. Hillier do lice in great bealmost if in the judy, and, are a few trick one to the great he desired to second to a great beinglicit the machine was necessityly permitted to rise, and it assembled as high as N. As the local register the machine was necessityly permitted to rise, and it assembled as high as N. As the local register the machine that desiring, for minists and trendre type on second the desired to the pay the first then the machine thought of the control of the con

On the 17th, M. Pillarn de Rozier repeated the experiment with nearly the same success as he had two days before. The matchine was elevated to about the same neight, being all detained by reper; last the wind pairs strong, if did not austian itself so well, and consequently did not afford so fine a spectacle to the concourse of people, which at this time was manch greater than at the preceding experiment.

On the Swadys Költering, which was the 19th, the worder proving forcemble, M. Mestgolfer employed his mediation to aduct the Gibbring apprintment.—At hist after four clocks, the muchine was filled in for missiste time; then M. Pilkites de Badier placed kinself in the gellowy, e constreption of 100 possibs being pain in the opposite side of it, in preserve the balance. The size of the gellowy has been been diminified. The nucleius was permitted to accord to the beight of about 210 feet, where it remained during six minates, not having any fire in the grants, and then it deconded very gentle.

Son after, receptibing remaining as before, except that now a few was put into the great, the matchine was permitted to social to boat 722 feet beight, where it remainds status, and stating acting of the matter and a half. On gaining it down, a gent of wind nortred it over some large trees of an adjoining garden, where it would have been in great danger, but not 14. the finite, with given presence or initial and address, forement the five by thereby some stree upon it; by which means the matchine was extricted from so dangerous a situation, and row majorically, assengths the exclusation of the spectator, to the situation in which it stude below. On descending the contraction of the street of the students of which the students of which it and others. On descending the contraction of the street of the students of the district on which it stude offsets. On descending the contraction of the students of the first students are students as well as the students of the contraction of the students are students.

This experiment showed that the acrostat may be made to accend and descend at the pleasure of those who as it; to effect which, they have nothing more to do than to increase or diminish the fire in the grate: which was an important point in the subject of aerostation.

After this, the machine was raised again with two peness in its gallery, M. Pilittre do Rosier, and M. Girond de Villetto; the latter of whom was therefore the second acrostatic adventurer. The machine ascended to the height of about 330 feet, where it remained perfectly steady for at least nine minutes; hovering over Paris, in



sight of its numerous inhabitants, many of whom could plainly distinguish, through telescopes, the acrostatic adventurers, and especially M. de Rozier, who was busy in managing the fire.

The machine being some down, the Manquist & Arlandas, major of infinity, took the place of M. Villetts, and the aerotast was let up once more. This last experiment was attended with nearly the asson success as the preceding; and they all proved and confirmed that the persons who accorded with the machine did not suffer the last inconvenience; which was owing to the gradual and gentle descent or accord of the machine, and to its studies or equilibrium which it reasonised in the attasylphism of the third provides a studies or equilibrium which it reasonised in the attasylphism.

If we consider for a moment the semantics which these first nortial adventurers must have felt in their cardial statution, we om hardy prevent an unusual belies lies in conversion. Imagine as use exicuted to need no height, time an inameses speec, by means allegether row, viewing moder his feet, like a map, a vast tract of country, with one of the greatest towns criting the attents and activation of which were crowded with spectations, statedly to him abon, and all expressing, in every possible numbers, their manament and their anxiety. Refer to the prospect, the occomism, and the consequence; then new of your minel remains in a state of quiet indifference of the property of the commission of the consequence of the new of your minel remains in a state of quiet indifference in

An interctive observation may be derived from those experiments, which is, that when an arrantation anchibes its plot cannided by reacy, operably at a constrained he leight there be pround, the wind belongs on it, must offer it is in town berimantal direction, so that the evolv shirtly hold the machine must make as angle with the herizon, which is present peaks the wind in attempts, an extensive principal consequence of which the machine must be underliked as the state of the state

In consequence of the report of the foregoing experiments, aigned by the Commissaries of the Academy of Sciences, that beared and respectable body ordered, Lt, That the anti-propt should be printed and public and 28dly, That the annual price of 600 livres, scording to the establishment of an anonymous citizen, be given to MM, Managadher, for the year Telephore, the way are the score of the commissaries of the commissaries

The account of a subsequent testimony to the importance of their discovery will not, I think, be here out of place, as in the year 1801 an obelisk was creeted opposite the College of Annonay, on the spot from whence the first balloon rose, bearing this inscription:—

" Aux deux Frères Montgolfier-Leurs concitoyens reconnissants,"

This obelisk was voted in 1783, but was not inaugurated till 1801, by the prefect of Ardèche, who records it in these words:—

This day (16 prairial an IX. do la lépnhique française) we, Charles Ambroise Caffarelli, prefect of the department of Ardèles, finding ourselves whilst on circuit at Annonay accompanied by the citizen Larivoire La Tourette, sub-prefect of the first arrondissement.

The citizen of this "Common" have represent their devire to see exceed the match pyramid but citizens of Annous had a careful to common reader the cut of traversing the atmospher, discovered by the two Menty golden, the first experiment heir places and the control of the former States of Vrania, behind of the Gray (Noise, 1976), a summer so this is one of table of their properties of their properties of their places of the former States of Vrania, behind of the Gray (Noise, 1976), a summer so this way on a table of the Hill, and which even his law presented screttly in the Places of the States of

Teached by the sentiments that animate the inhabitants of Annonay, and considering the most hononrable attribute of the rank to which we have been raised is that of encouraging the arts, and to reader to the grains of discovery a striking testimony of the value the Government attaches to those who naits utility with fame—

Wo order that - The Pyramid shall forthwith be erected on the spot where the first experiment was made, on the 3th of June, 1781. The first stone of this obelisk shall be laid to-day, 16 prairial, corresponding to the 5th of June.

It was duly laid among the acclamations of thousands, who cried, "Vive la République!

The experiments hidrer to make, specially these of the 19th of Outdoor, having prepared the way for a fair ravial assignate, the attempt was find for the 50th of November [18], everything being prepared for it at Noteta, a royal palses in the bird for Beschgers. Notwithstanding that no selveriments relative to the experiment had been membered in the palsife prepar, as at notliticals ossensible, in the gadest as Lawtine on the normal ball to membered the palsife prepar, surge approximate such legan; but the rain and the wisk, which course or substitute that the palsife prepared in the palsife prepared to the fields using the palsife prepared to the field of the palsife prepared to the fields using the palsife prepared to the field of the palsife palsife prepared to the field of the palsife pals palsife palsife palsife palsife palsife palsife palsife palsife

Accordingly, on the 20th, the viole, which he'r et intervals, and the appearance of large cleuds, threatened a record disappointment, netwitheridating bethe, everything being pair readiness, the mosailes was filled in a few minete' time, and M. do Biorie, together with the Marquis' d'Arbinde, placed themselves in the gallary one one sais dei fai, and the other or the operagion, in order to prevent the equilibrium. In the 3th Menegolish mode one of the said of the modeling,  $\Phi_{th}$ , the around was been confirmed by the proposition of the modeling,  $\Phi_{th}$  the around was been confirmed by the proposition of the modeling,  $\Phi_{th}$  the around was been confirmed by the proposition of the modeling,  $\Phi_{th}$  the around was been confirmed by the proposition of the said of the proposition of the confirmed proposition of the confirmed proposition of the confirmed proposition of the confirmed and required to the confirmed proposition of the confirmed and was required in loss than two bours. They place filled in again, put into the gallary than conceasing the confirmed proposition of the confirmed proposition of the confirmed and was required in loss than two bours. They there filled in again, put into the gallary with according and suggestion. The whole weight of the medicine, travelless and all, was between 100 and 1709 pounds.

The secretal cally and majorisally into the strategies, but one o'clock proof and yet ever some high trees, and secreded calliny and majorisally into the strategies. The secretar having reached the altitude of each 200 feet, not off their bets and salved the surptiond multimole. Buy there are too high to be destinguished, we find that in markine below the sacress precisions. We then they not a two vides was every neighbor the secretary of the sacress precisions. We made upon the value of the sacress produced by the sacress produced by the sacress of the s

When they came down, about two-thirds of the feel was still remaining in the gallery; so that they might have kept themselves up a nucch looger time. The machine was soon folded up, and, being pot on a cart, was sent to the place where it had been originally constructed, in the Fauthoring St. Antoline.

Thus far has been collected from the accounts given by various spectature, and especially from the exhibition of the experience, which was signed by the Durkes of Poligiesa and de Gittuse, Counts do Polistane and de Vandread, Dr. Benjamin Franklin, and MM. Fayia de Saise-Food, Dulish, and Lerry, of the Academy of Sciences, Bas, as the transactions of the seconstant dring their rouges one could be known from the second them to the recommendation of the rouges of conditions of the second from the leaves of the leaves of the second from the leaves of the

"At this time M. Plitter and, N. inch nothing, and we shall not most. Fashin me, I replied—I there a true of craw upon the first variety in its little in the assention, and these publicy means of upon both and gain but of craw upon the first variety in its little in the assention in the level publicy means of upon the look again, but of craw of the first variety in the latest and the latest variety of the latest va

A.D. 1783.

to burst: I looked, but did not see anything. However, as I was looking up. I felt a shock, which was the only one I experienced. The direction of the motion was from the upper part downwards. I said than, What are you doing ? Are now descript ?- I don't stir, said he. So much the letter, replied 1, it is then a new current, which, I have, will push as over the riser. In fact, I turned myself in order to see where we were, and I found myself between t Ecole Militaire and les Involides, beyond which place we had already gone about 2500 feet. M. l'illitre said, at the same time, We are on the plain. Yes, said I, and we adequee. Work on, said he. I then heard another noise in the machine. which appeared to be the effect of a rope breaking. This fresh admonition made me examino attentively the interior of our habitation. I saw that the part of the machine, which was turned towards the south, was full of rennd heles, many of which were of a considerable size. I then said, We must descent, and at the same time I took the aronge and easily extinguished the fire, which was round some holes that I could reach; but leaning on the lower part of the linen, to observe whether it adhered firmly to the surrounding circle, I found that the linen was easily separated from it, on which I repeated, that it was necessary to descend. My companion said, We are over Paris. Never mind that, mid 1, but look if there appears any danger for you on your side-are you safe! He mid Yes. 1 examined my side, and found that there was no danger to be apprehonded. Farther, I wetted with the sponge those cords which were within my reach. They all resisted, except two, which gave way. I theo said, We may pass over Paris. In doing this, we approached the tops of the houses very sensibly; we increased the fire, and rose with the greatest case. I looked bulow mo, end perfectly discovered the Mission Etranger. It seemed as if we were going towards Saint-Sulpio, which I could perceive through the aperture of our machine. On rising, a current of air made us leave this direction, and carried us towards the south. I saw on my left a sort of forest, which I took to be the Luxembourg; we passed over the Boulevard, and I then said, Let us not descend. The fire was nearly extinguished; but the intrepid M. Pilatre, who never loses his presence of mind, and who went forward, imagining that we were going against the mills that are between Petite Gentily and the Biolevard, admonished me. I throw a bundle of straw on the fire, and shaking it in order to inflame it more easily, we rece, and a new current carried us a little towards our left. M. Rozier said again, Take care of the sails; but as I was looking through the aporture of the machine, I could observe more accurately that we could not need with them, and said, We are there. The moment after, I observed that we went over a piece of water, which I took for the river, but after landing, I recollected that it was the piece of water, &c. The moment we tenched the ground, I raised myself up in the gallery, and perceived the upper part of the machine to press very goutly on soy head, I pushed it back, and jumped out of the gallery, and on turning myself towards the machine, expected to find it distended, but was surprised to find it perfectly emptied, and quite flattened," &c.

Account of the first America's Experience made in Expinat—It is neuroscalar transcribble, that more than five months had despine, sizes M. Monepiler made has their place inscribing experience it shames, the lawse of which, as well as of his subsequent appriments, was applify and universally preval, and yet not experience of the sizes had been used not of Pronce, I that made is no industrically respect. In this binade, where the improvements in the lawse made of Pronce, I than two is no industrically respect. In this binade where the improvements prevalence is the proper in the Pronce and enconquently affect it would be unknown to been fine, melling and appears, obsert experiments, which others were nothing banding observabors. At least, the certainty of the bearned aspitus, obsert experiments, which others were nothing banding observabors. He least, the certainty of the bearned aspitus, observed the size of the contrast of the c

Let this be as it may, the notice of fact is, that the first normalize experiment was aboven in London in the month of Normann's 1755. Coult Zamberck, an improvine limit, no be happened to be in London, and he hablom of all silk, which was to net in disasters, and weighed eleven pounds. It was gift, both in order remarked in town beautiful, and more impreceased to be infinimulated in Cyliropan. This hallom was parallely above from the infinimulated in Cyliropan. This hallom was parallely above from the infinimulated air; a direction, for my person to whendid alternated fall, indicated in a risk, once, was fasted public with and, in the presence of mony thousand epoctators, it was lammhed from the Artiflury Ground, at one c'elect, in the afformace. in Sussex, forty-eight miles distant from London; so that it went at the rate of near twenty miles an hour. A rent formed in it, which was certainly the consequence of the rarefaction of the inflatamenable air, when the balloon came into a much lighter part of the atmosphere, must have been the occasion of its descent.

We must now return to the acrostatic experiments made in France, and must defer describing those usade in England till the order of time renders it necessary.

Access of the first Arried Upope made with an informanthesis (hydrony). Bullon.—The success of the experiment with the inflammable-air bulloon, made in the Chomy de More, and the other experiments made after that, with M. Meatapollor's secretari, naturally suggested the idea of attempting a veryoge in an inflammable-it bulloon; every consideration, excepting the dearness of the inflammable air, seeming to give the preference to the inflammable-it follows, as a whelle for a social veryoge.

The plan for such a voyage, and every necessary calculation, being made, the balloon was constructed by the Eleberts, two brothers, very intelligent in mechanics. Their project was first amounced to the public in the 'Journal da Paris' of the 19th of Nevember, 1783; and a subscription was opened in order to definy the organises, which, as it was calculated, would amount to about not subnassal livres.

As soon as the balloon was finished it was inflated with common air, and was publicly shown in one of the great chambers of the Tuileries till the 20th, on which day it was suspended to a rope stretched between two trees before the Tuileries.

This hallow was make of green of silk, covered with a variable, aid to be a chottlen of clustic gam (constease). In fear was applicately, measuring treat-system for that als laif in dismoster, A next weat over the upper hemisphers, and was faitness A as the vast over the upper hemisphers, and was faitness for a loop that went round the middle of the hallons, and was therefore called its expanse. To this equator was superdood, by genera of power, as artie of our, or rather to both which reaper age few feet below he hallons. In order to prevent the burning of the methins, by the capasation of the inflammable air, a valve was most in it, which, by pulling a string, we onesed to let set some of the inflammable in There was likevies a dome in it, which, by pulling a string, we onesed to let set some of the inflammable air. There was likevies a content in the pulling a string, we onesed to let set some of the inflammable air. There was likevies a like in the pulling a string was onesed to let set some of the inflammable air. There was likevies a like in the pulling a string was onesed to be strong the inflammable air, rather was a like in the string a like in the string a like in the string and the string a like in the string a like i

This famous exprises two performed as Monday, the 1st of Documber, 1783. The Taileries, the PracEnjewise expression and every adjacent place, were resolved with protection. A summore good of soldiers preserved solds, and protected the operation. Mathematical persons with proper instruments, were conveniently resolved and protected the operation. Mathematical persons with proper instruments, were conveniently soldiers and the properties of the process of the properties of the

It may be said of this ascent that Charles completely created the "appared" of accreation; for in reality he thought of the valve for allowing the scenge of gas to cause, a slow and gradual descent of the acreata, the car for the voyagers to sit in, the number of roges to support it, the ballast to regulate, and the larrounder to measure ascent and descent; and also the varnish that renders the silk impermeable, and prevents the loss of gas. For this, his first ascent, Charles created all these ingenious contrivances; since then nothing has been changed, little has been added. He gave his name to the Charlières, or gas belloons.

When the balloon had reached the altitude of about six knodred yards, the two aerial navigators indicated their safety by frequently waving two pendants, though they themselves could not be distinguished from the

ground. The specialors were by this time awakened from their astonishment; enthusiasm took the place of silonce, and nothing but expressions of praise and applicase were by every month amexed to the names of Charles and Robert.

Soon after their assent, they remained stationary for a short time; then they went broincably in the distortion  $X_i W_i$ . They removed the Sine, and passed over never to most and tillages, to the great sottlebilished indiction  $X_i W_i$ . They removed the Sine, and package that more heard of, this new sort of experiments. This delicities recognite alone hower new direct questions. At last they descended in a fold more  $X_i W_i$ , a small two, about twenty-access miles distort from lexit, it being then three-question particular  $X_i W_i$  and they had good at the new description may be only the similar of the similar points of the stand of colds.

A short time after their descent, they were overtaken by the Dukes do Chartres and do Fite-James, who had do after the balloon, and did them the honour to sald their manse to the certificate of their descent, which had been already drawn up and signed by other persons, who had arrived sooner.

The balloon still containing a considerable quantity of inflammable air, M. Charles determined to ascend once more. M. Robert then got out of the boat, which lightened the balloon of 130 pounds. This weight they intended to supply with ballast; hat not finding any conveniency to take up any earth or stones vary readily, and the sun being near setting, M. Charles, without losing more time, gave the signal to the peasants who held down the machine, to lot go; " And I sprung up," says ho, " like a bird. In twenty minutes I was 1500 toises high; ont of night of all torrestrial objects. I had taken the necessary precautions against the explosion of the globe, and prepared to make the observations which I had promised myself. In order to observe the barometer and thermometer, placed at the end of the car, without altering the centre of gravity, I knelt down in the middle, stretching forward my body and one leg, holding my watch and paper in my loft hand, and my pen and the string of the valva in my right, waiting for the event. The globe, which, at my setting out, was rather flaccid, swelled insensibly. The air escaped in great quentities at the silken tube. I drew the valve from time to time, to give it two vents; and I continued to ascend, still losing air, which issued out hissing, and became visible, like a warm vapour in a cold atmosphere. The reason of this phenomenon is obvious. On earth, the thermometer was 47°, or 15° above freezing point; ofter ten minutes' ascent it was only 21°, or 11° below. The inflammable air had not had time to recover the equilibrium of its temperature. Its clastic equilibrium being quicker than that of the heat, there must escape a greater quantity than that, which the external dilatation of the air could determine by its least pressure. For myself, though exposed to the open sir, I passed in ten minutes from the warmth of spring to the cold of winter; a sharp dry cold, but not too much to be borne. I declare that, in the first moment, I felt nothing disagrecable in the sudden change. When the barometer ceased to fall, I marked exactly 18 inches 10 lines (20-01 in. English), the mercury suffering no sensible oscillation. From this I deduce a height of 1524 toises (3100 yards), or thereabouts, till I can be more exact in my calculation. In a few minutes more, my fingers were benumbed by the cold, so that I could not hold my pen. I was now stationary as to the rising and falling, and moved only in on horizontal direction. I rose up in the middle of the car to contemplate the scene around me. At my setting out the sun was set on the valleys; he seen rose for me alone, who was the only luminous body in the horizon, and all the rest of nature in shade; he, however, presently disappeared, and I had the pleasure of sceing him set twice in the same day. I behold, for a few seconds, the circumamhient air and the vapours rising from the valleys and rivers. The clouds seemed to rise from the earth and collect one upon the other, still preserving their usual form, only their colour was grey and monotonous from the want of light in the atmosphere. The moon alone calightened them, and showed me that I was tacking about twice; and I observed certain currents that brought me back again. I had sovaral sensible deviations; and observed, with surprise, the effects of the wind, and saw the streamers of my banners point newards. This phenomenon was not the effect of the ascent or descent, for I then moved horizontally. At that instant I conceived, perhaps a little too heatily, the idea of being able to steer one's course. In the midst of my transport I felt a violent pain in my right car and jaw, which I ascribed to the dilatation of the air in the cellular construction of those organs, as much as to the cold of the external air. I was in a waistcoat and bareheaded. I immediately put on a woollen cap, yet the pain did not go off but as I gradually descended. For seven or eight minutes I had ceased to ascend; the condensation of the internal inflammable air rather made

use descend. I have recollected my promise to return in half an hour, and, pulling the string of the whay, I came down. The globe was now no much expective, that it appeared only a half glabs. It persived a fine phosphic field near the wood of *Hore de Jay*, and hostened my descent. When I was between twenty and thirty foise from the surft I down out thought you or there possible of halfs, and become for a necessity of the production of the

For this exploit he received from the king a pension of 2001, who also ordered his name to be insertled on the Montgolfier medial; but it was a case in which we' may repest the saying of the great Condé;—"Il out du courage co jour-là," as he never ascended again, having sworn, it is said, not to do so when Robert left the ear; and he ascended alone with the swiftness of an arrow.

We will pass over many accounts of minor interest, and insert one which could not reach our narrator in these stemules days. Experiments had been made at Philadelphia, US, as to the adoption of gas for bullcons, almost simultaneously with its adoption in France; a remarkable oxincidence, (requestly noticed in the history of discovery and invention. For on the arrival of the news of P. de Rosier and Marquis d'Arlandes exploit, Mesers, Rittenhouse and Hopkins, members of the Philosophical Anedomy of that city, instituted a series of experiments, which resulted in the construction of a machine with forty-seven small plotpeas statched to a car, or cage (as they called it). After some preliminary trials of animals, and one man let up to a certain height, and palled down by props, Mr. James Wilcox, a carpenter, assended free (28th December, 1783). Perceiving himself rapidly approaching the Setulyed River, and apprehensive of falling into it, he took the necessary steps to occasion his doscent, and, according to his instructions, made incisions in three balloons; but this proving infective, he cut three more, and then five, nearly all at the same time. This caused so violent a descent that he dislocated his wrist. Such was the first experiment in the New World.

On the Th of Journey, 1744, the pieces which were to form the largest arentatic metaline inhierits launched were brought and of Journa into ace of the subrise, duelt less Prelitation, and the two Edistring day were employed to juin those pieces together. In the menting of the 10th they made the first easy. The fire was lighted, and in trenty minutes the matchine was perfectly inflate, and in this state, the code which were the 50th figure level begin to be facel. On the 11th they inflated the machine again in order to fix mere of the rapes for the gallery; and, in indext, they worked increasingly ill the 10th to fix the peace, to saturate the arrai to year, and to require the rartee and other damages which the machine continually received from being offician inflated and from the injuries of the workley is face to him, the seave, the fixed and almost all the desemble, second any given this insoferance machine, which, being constructed of leaf materials, who tilt doly to estation those injuries. Vertrelledes, in warms retains it had above it of the completing power; and one, no participa to lained or stray injuries. Vertrelledes, in warms retains that the others in develope the content of the state of the machine, novelope in the content of the state of the state of the other contents of the state of the state

At last, on the 19th, the weather was pretty clear with very little wind, the sun showing itself at intervals.

The thermometer stood at 45°. Everything was got ready for the experiment, and a proligious crowd of speciators

<sup>\* ·</sup> Bevar des Deux Mondes,' 1852.

assembled about the place; but as the machine had been wet, and in the night it had frozen very hard, it was necessary to thaw the ice by degrees, which was effected by making several small fires under the scaffold; but this naturally took up a considerable time, so that the experiment could not be begun before noon. The fire was now lighted, and the machine soon began to swall, assuming the best form that could be wished; but the spectators, who had been often disappointed, showed at this time a great deal of anxiety, their minds seeming to fluctuate between hope and fear. In seventeen minutes the machine was filled, and was ready to ascend; the intended six passengers took their places in the gallery, and nothing was wanting but the signal of departure from M. de Rozier. But this gentleman, considering the indifferent condition of the machine, that had greatly suffered in the preceding trials, was of epinion that the experiment would certainly fail if more than three persons ascended with it; his remonstrances were of no effect, for none of the adventurers would leave his place on any account whatever. Upon this, the interposition of M. le Flesselles, the intendant, was requested; but his authority could not pravail on thom to cast lots. At last, their obstinacy being naconquerable, the signal of departure was given, with reluctance and with fear, and the ropes wern out off. A very remarkable instance of enthusiasm, rather than courage, happened at this instant. The machine was not raised above a foot or two from the ground, when a seventh person, one M. Fontaine, jumped into the gallery, which occasioned a sudden depression of the machine; hat, by increasing the fire in the grate, the whole ascended majestically and with moderate rapidity. On meeting with the wind, it was turned from the east, instantly, towards the west; but it afterwards proceeded cast-south-east, ascending at the same time till it was at least a thousand yards high. The offect produced on the spectators by this speciacle is described as the most extraordinary that was over occasioned by any production of human invention. It was a mixture of the strangest nature. Vociferations of joy, shricks of fear, expressions of applause, the sound of martial instruments, and the discharge of mertars, produced an effect mere easily imagined than described. Some of the people fell on their knees, and others elevated their suppliant hands to the heavens; some women fainted, and many wept: but the confident travellers, without showing the least appearance of fear, were continually waving their hats out of the gallery. The wind shifted again, but it was very feeble, so that the machine stood almost stationary for about four minutes.

Understandly, short this time, which was noar fifteen minutes after the secret, a rest was node in the modifies, which consistent in the absorts; at when it more within short at hundred feet of the ground it desceeded with a very great celerity. It is night that to be then sirty thousand people, healths the Marchansies, run to the sort, with the greatest approachesis for the lives of those abstractors areful travelles. They were immediately helped out of the gallery, and beckly none of then had received any hart, except M. Mantgalfer an ineignificant except. The matter was term in several pieces, besides a vertical rest of upwards of thify feet in better which above very clearly how filled design is to be apprehended from the use of those machines, especially when they are properly constructed and platforts by managed.

The following are the names of the seven travellers: M. Joseph Montgolfier, M. Pilâtra de Rozier, Cennt de Laurencin, Cennt de Dampierre, Prince Charles de Ligne, Count de Laport d'Anglefert, and M. Fontaine.

Lemantic Experiences made in February and March, 1748—The first balloon that crossed the English Chamelwas luminode from Sanchérich in Kent, or, 1749, by, the 224 of February, 1784. It was not indimumbled as illusion, for feet in diameter, which was let loos at half-past trevber of clock, in the presence of a great many spectator. The balloon was cost by costs. It was found, at three of clock of the same day, in a field near Warnetch, in Frued Finders, mis mile from Lide, by abo, we careful it by Monizur Februpt, at Warnetch, in Frued Finders, mis mile from Lide, by abo, we careful it by Monizur Februpt, at Warnetch and Monizur Februpt, and the water of the balloon, in which is was requested that an account of the time when, and place where, the abid balloon should be found, might be seen to William Boys, Leg., at Sakoiviet, went reports was policyle compiled with. The straight distance between Sakoivich and Warnaton is seventy-four milles and a half, so that this belloon was at the not of above thirty also as bown.

The Chevalier Paul Andreani, of Minn, was the first person in Holy who had an aerostatic machine make at his own express for the purpose of making an sorial vayage, in which attempt he sottally succeeded on the 23th of February, 1784. The project was entirely his own, but for the practical execution of the work he employed the brothers Augustin and Charties Gerlin, persons of a mechanical genius.

The machine was spherical, of about sixty-eight feet in diameter, made of lines, lined with fine paper. In

the inside, towards the middle of the madnin, there was a worder some or loops, and another loop, of fourtees fort in distinctive, are mode in agenture. On the top of the madnin there was a sort of lange remarks of word, strengthened with an iron loop, from which years proceeded, which went aloves along the seams of the machine, and we want to the contract of the pop of the population. Only mentioner cond-even factored to the lines, and, crossing the larger rope, made a next of network. Been about mode at man, which proceeding from the loop of the apprixing, bold the displaces or opport function of about mode and in distinction. Only proceeding from the same loop plant a crossical backs, which should made the statute of an advantage times from the same loop plant a crossical backs, which should made the statute of an advantage time of the same and the

the persons in it might easily supply the fire with fuel and at the same time were not incommoded by the heat. The machine, being constructed, was secretly transported to a seat of the Chevalior, called Moneucco, which is eight miles distant from the town. Two ineffectual trials were made: each time the machine was perfectly inflated in fifteen minutes, but it did not lift up the annexed weight from the ground. However, on the 25th, at about noon, the fire under the machine was lighted; it was supplied at first with very dry wood, and afterwards with a composition of hituminous substances. The machine now made evident endeavours to rise, and, it being imagined that giving more freedom to the air under it would increase its power, the Chevalior judiciously ordered those who held the ropes to let the machine rise a little, which was attended with the desired effect. The machine instantly manifested it had acquired an increase of power, in consequence of which the Chevalier and the two brothers Gerli put themselves into the gallery or circular basket; the ropes were let loose, and the machine, with the three adventurers, immediately ascended, with a slow and almost horizontal motion, directing itself towards the building, to avoid which the fire was increased, and then the machine ascended with repidity to a great height, so that it was seen from the city, which was eight miles off. At this height they met with a current of air which seemed to drive the machine towards the adjoining mountains; but as this was not an eligible direction, and as the fuel was almost exhausted, they thought proper to descend; and accordingly, the fire being diminished, the machine gradually descended. In coming down the account was going directly over a large tree, but by a proper management of the fire it just cleared the tree; after which the people that had run to its assistance laid hold of the ropes that were swinging down and conducted the machine to a safe place, where the intrenid travellers alighted without the least inconvenience. In consequence of the less of this weight the machine acquired such power that it required the assistance of many persons to detain it. The machine being thus capable of keeping itself swelled, they availed themselves of its condition, and carried it, in that inflated state, over trees and other obstructions, to the place where it had been filled, which was not above a quarter of a mile distant. The machine remained in the atmosphere for about twenty minutes. It is remarkable that this machine, notwithstanding the various trials it had undergone, had not enflered the least damage. Its upper part especially, like that of the machine used in the experiment at Vorsailles and that also at La Muette, was neither scorched nor in any other manner affected by the fire, which is a circumstance deserving of notice, particularly because it has been commonly said that the upper part of those machines would be always hurned or scorehed.

On the 19th of February an inflammable-air balloon of five feet in diameter was launched from Queen's College, at Caford. It was of a spherical form, made of varnished Penian silk, and it seems that this was the first balloon seen in that town.

The next social vegges we are to describe was made by one who, as will appear from the expel of this history, has performed preserve more for executions than so, other percent previous for between, 1788, and is the first who crossed the English Chanad with an averantic machine. This ingenious Freedman, M. Jean-Free Blackack, Julie, for werred years below? Montgolffer? discovery, Joseich basical in attempts to fly wenchasical among; but it appears, from a passage in a latter of his to the eithers of the 'Josenad de Yin's,' that he were recovered in this multituding? I was soon as the discovery of the averantic machine was much, but immediately reached to not one of those machines for the lifting power, and to add the wings of his ferner scheme for directing his connection through the air.

After a great deal of contrivance, and some calcelation, M. Hanchard at last constructed an inflammable-air balloon of twenty-seven feet in diameter, with a bost made and suspended nearly in the same namer as that of Charles and Robert, only he added two wings and a rudder (governess) to his bost. He had likewise a sort of large

<sup>\* &</sup>quot;Je reuls dore un hrennage par et sincles à l'immoriel Mongedier, sons le secours duquet j'avons que le monaine de mes ailes ne missels pent-être juneis errit qu'à agiter ne élement inderlie qui m'auseit obstituient reponsé vers la terre comme le louis autrurbe, moi qui comptet disprier à l'algie de demin des more;

umbrella spread horizontally between the balloon and the boat, which, in case the balloon should hurst, would check the fall.

With this billows. M. Blacchards made his first sterial veyage on the 2nd of March, 1754. As the incidence of this veyage and or very strange and remainst nature, Infinit hat a perificults account of them will und be unacceptable to the reader. The billow, with the rest of the metal-interior and experients for filling it, was carried to the through 450, the piece from whereoe the first infinamables in allow much on similar occusions, an immense number of people assembled about the piece. The mechine being filled, M. Blanchcard and learned interior is first and the preserved in the whight is the boat reader to greatly on the first information of the similar to the boat extent to great the whole fill very positive and to stock fitted ground the boat reviewed an unpleasant deck. In consequence of which the Print's was permeable to absolute his read. But the third was not at the contraction of the similar theorem in the contraction of the similar through the present has been exceeded in the production of the print of the product of the print of t

This youth (from the Military Academy) was for some time believed to be Napoleon Buonaparte; but, on a more careful inquiry, his name was found to be Dupon de Chambon. Napoleon also contradicted this in conversation with Las Cases at St. Helena.

Every\_expostulation or remenstrance of M. Blanchard, and of many persons of the first rank who were present, was ineffectual to persuade the young gentleman to give up this desperate attempt. His answer was, that he was provided with the King's licence; and, on being desired to show it, he presented his sword, with which, it is said, he wounded M. Blanchard on the wrist. At last, the Marquis de Conflans, at the risk of his life, pulled the young enthusiast out of the boat, and, delivering him to the guards, ordered them to confine him. This strange contest being over, M. Blanchard alone, without fear or hesitation, ascended with his balloon very rapidly into the atmosphere; but, notwithstanding his endeavours, the wings and rudder of the best seemed to have no effect, and the wind drove the balloon in its direction. It crossed the river, and went over Passy; but M. Blanchard found a perfect calm, so that it remained stationary for about fourteen minutes. Then he crossed the river a second time, and in this passage the clouds appeared under his feet. He now felt the heat of the sun's rays, which was rather strong, and stood stationary again for about fifteen minutes, the balloon being at the same time aritated by two opposite currents of air, on which he threw four pounds of ballast ont of the bont, and, ascending higher, met with that current of air in which he had gone at first, and which carried him vory rapidly again across the river. Here he was obliged to throw out more ballast, by which means the veryage was prolonged as far as the plain of Billancourt, near Sevres, where he descended at thirty-five minutes past one o'clock, after having been in the atmosphere an hour and a quarter, during which time he had experienced heat, cold, hunger, and an excessive drowsiness. On his return to earth he was welcomed by many thousands of people, who had watched his progress all the way.

On the 13th of March the Chevalier Andreani, and two ether persons, acconded a second time into the atmosphere with a randed-air muchine, from the same place where he had performed his first experiment. The muchine attained to the height of 5200 feet, and travelled to the distance of ever miles.

It was about this time that M. Argand, an ingenious gentleman of Geneva, being in England, had the honour of exhibiting the serestatic experiment, with an inflammable-air balloon of about thirty inches in diameter, in the presence of the King, Queen, and royal family at Windsov.

After the neath of February balloons of both hinds, but especially filled with rarefed air, become very common in Egyptian as well as in other parts of Fourges. In London, during the spring, the summer, and the autumn, paper halboon, mised by means of riginit of wine, and generally from these to dive feet in disastice, were correctlying by splits and the part of the parts of the Arentetic Experiments ands in the Months of May, Jens, and July, 1784.—At Paris, on the 20th of May.

N. Mentgolifer made a private experiment with an acrestatic machine of seventy-four feet in height and seventy-two in diameter, with which four latein severaled in the atmosphere. This machine was raised from the Fauteorg.

Skint Antoine, and was elevated above the highest binklings of Paris, where it reessined confined by repea for a considerable time. Those corrappose allots were—

Maies, La Marquiso de Montaliment; La Coistesse de Montaliumit; La Ceintesse de Poistas; Mile, De Lagarde; accompagnées de

MM. Le Marquis do Montala Muchir et Artand de Ballanus.

Twosh the later and of May the following remarkable accident happened at Dijos (it is related by the ingenion M. do Brown, A. hallow, intended the tellified with intensable site, being respective, who, by way for test, filled with cosmon air, and in this satie was kep in the spen air. New if was observed, and include a california delevated has been such either and below may not be the best made before into the air within the ballow was much before them the circumsandest the satient of the satient and the same and the satient and the same and the

At Lyons, on the 4th of Jaso, in the presence of the King of Sweden, two persons, namely, M. Fleurand and Madama Thilbs, ascended with an secretatic machine called Lo Gustave, which was severaly feet in diameter. They went to the distance of about two miles in feety-dre minners. The greatest alluted reached in this exercision is estimated at about 8500 feet. This experiment will probably be long remembered, since it was the first time that a weama mode as neith verage.

On the 27rd of June a large nermat, on the principle of randrel six was elevated at Versallies, in the the prosecs of the report family and to King of Serolas, whe travelled under the mass of Cost Higs. The higher prosecs of the report family and to King of Serolas, which was always one fort solv half, und to diameter accessystates. M. Filters be Raiser and M. Prostave and the searched with it. The manther was filter to match the was always one fort of the free growth of the free growth of the first price and a first the grown at a first price animate, when it and for descended in the first price animate, when it and for descended in a first price animate of the first price of the first price descended in the first price animate, when it and for descended in a first price animate price animate from the first price and the first price animate from the first price and the first price animate from the first price and the first price animate from the first price and the first price animate first price and the first price animate first price

On the 15th of July the Dale of Cutarts, the two brothers Balest, and another process, ascended with an infinamentheir bulben from the Park of S. Chind of Highyese integer steep reds with the distracts. This ballow was of an abbeing from, measuring Highye's released with all in length and thirty-daw in distancer. It manners, it descends it at a little distance from whence it had seconded, and at door high refer the dates from the Lake do in Greeners, in the Park of Healest. But the insidents that happened from the arrive extension descree to locaristicated weekers, and such give the intellectual contained in interior scalabr bulbon, filled with content at it, by which means, according to a cheene beneather to The Balest and the Content of the Con

On the level of the sea the haremeter stood at 39°25 finches; and at the place of departure is stood at 30°2. In the institute after its successful gibe balloon was have in the cleants, and the search weapers to stapict the earth, being inverted in a cleane yeapon. Here an unassal against on the size, meanwhat like a whitwind, in a moment turned the machine three times from the right to the left. The violent shocks which they suffered prevented their using or of the means proposed for the direction of the balloon, and they even to seaw the silk tend of which the

belm was made. Never, said they, a more dreadful scene presented itself to any eye than that in which they were involved. An unbounded ocean of shapeless clouds rolled one upon another bounds, and seemed to forbid their roturn to the earth, which was still invisible. The agitation of the balloon became greater every moment. They cut the cords which held the interior balloon, which consequently fell on the bottom of the external one, just upon the aperture of the tube, which went down into the boat, and stopped it up. At this time the thermometer "howed a little above 44". A gust of wind from below drove the balloon upwards, to the extremity of the vapour, where the appearance of the sun showed them the existence of nature; but now both the heat of the sun and the diminished density of the atmosphere occasioned such a dilatation of the inflammable air that the harsting of the balloon was apprehended; to avoid which, they introduced a stick through the tube that proceeded from the bulloon, and endeavenred to remove from its aperture the inner balloon which closed it; but the dilatation of the inflammable air pushed the inner balloon so violently against the aperture of the tabe that every endeavour proved ineffectual. During this time they still continued to ascend, until the mercury in the barometer stood not higher than 24-36 inches, which showed their height above the surface of the earth to be about 5100 feet. In these drugdful circumstances they thought it necessary to make a hole in the balloon, in order to give an exit to the inflammable air; and the Duke de Chartres took himself one of the bunners, and made two belos in the balloon, which tore open between seven and eight feet. They then descended very rapidly, seeing at first no object either on earth er in the heavens; but a moment after they discovered the fields, and were descending straight into a lake, wherein they would inevitably have fallen, had they not quickly thrown overboard about sixty pounds weight of ballast, which occasioned their coming down at about thirty feet beyond the edge of the lake. Notwithstanding this rapid descent, occasioned by the great quantity of gas which escaped out of the two rents in the balleon, none of the four adventurers was hurt; and it is very remarkable, that out of six glass bottles full of liquor that were simply laid down in the boat only ene was found broken.

On the 18th of 7sly M. Blacchool made his third sorial vegage, with the same inflammable-wire balloon from Borne. He was accumulated by some Majory and in the source off the vegage he say, that when they ascended there were 210 pounds of faillant, besides their weight, in the boat. In this vegage M. Blacchool had harmonize and the thermaterity, the firmer of which can be good attend at 50 miles and the latest and 7s. The wind was nerth-west. They set off at a quantry not five o'clock in the silternoon from the harmonic field of the silternoon and an in-even minister time the learnanter field "16 inches, and the therementer for Desiring the vegage, M. Blacchool says, that by agitating the wing set fail so the strine assembled, descended, west able-way, and even, in some manners, equide the wird. I what not the verification says, that previous the find allowers, M. Simchool, and manners are the situated to the verification says, that previous the find allowers, M. Simchool, the wind is the contribution of the previous the find allowers, M. Simchool, the third of the situation of

At half an hour past seven they descended safely in the plain of Paissanval, near Graudcour, which is forty-five miles distant from Roues, 110 pounds weight of ballast still remaining in the boat.

One of the certificates, signed by many persons, testifies, that for this experiment the balloon was filled by N. Vallet in the remarkable short time of one hour and a half. The last certificate that is answerd to the seconat of this verage says, that the balloon remained full all the night, and that on the following day, having nucleosed it by means of rapes, which permitted it to ascend only to about eighty feet, divers holion ascended successively with it; and they found the experiment for from being dangeroom of nightesing.

The balloon was at last executed of its gas, to effect which not only the valve was opened, but a great aperturn was made towards the inferior part of the balloon, which was laid on its side and pressed; and yet more than an hour was required to empty it; from whence may be concluded, that if a rest of three feet should be made in such a halloon, whilst in the atmosphere, the loss of inflammable air would not be sufficient to eccasion a dangeroun full.

Cavallo now gives an account of Lunardi's, as the first aerial voyage in this country; but I prefer inserting Lunardi's own letters, as they are lively, and depict London society of that day. This priority, moreover, was owing to the slowness of intelligence; for in the Public Ledger of August 16th (1781), we read that, on August 9th, An etempt was made to harmen a firsh-alloon from the Comely Gardens, Ellinburgh; but just as it had been filled, and Mr. Tyrller was about to take his seal in the lauket, now of these unlessly excellents, which hitherto have nover failed to attend every proposed exhibition of this savial machine, took place. The consequence was a relinquishment of the project for the present.

However, on August 27th, the following letter was written to and inserted in the London Chronicle:— Elisburgh, August 27, 1744.

Mr. Tytler has made several improvements upon his fire-balloon. The reason of its failure formerly was its being made of porous lines, through which the eir made its escape. To reason this defect Mr. Tytler has got

is covered with a varnish to retain the inflammable air efter the balloon is filled.

Early this morning this bold advocuture took his first sarial flight. The balloon being filled at Councyl
Garlen be seated himself in the backet, and the reper being cut be secured very high, and descended quite
meanhally on the roat to Restatire, solven half a mile from the place where he rose, but four anticles of these

speciators who were present. Mr. Tytler want up without the furnace this morning; when that is added he will be able to feed the balloon with inflammable oir, and continue his serial excursions as long as he obsones. Mr. Tytler is now in high spirite, and in his turns loughs at those infidies who ridicated his scheme as

Mr. Tytler is now in high spirits, and in ms turn isogns at those induces who reaccused his scheme a visionary and impracticable. Mr. Tytler is the first person in Great Britain who has navigated the eir.

It is reunrikable that the 'Gentleman's Magazine' (vol. liv. part li. pp. 709 and 711) should accurately elumnicle both ascents, and yet speak afterwards of Lunardi's as the first, when the dates speak to the contrary.

To Tytler, therefore, belongs the title of the first Aeronaut in Great Britain; and, with the exception of Mr. Smeath, in 1837, he was also the first, and the only one, to use a Montgolifer in this country.

I will now give Vincent Lunardi's account of his 'Errit Aerial Voyage in Eugland' (1783), published in a series of letters to his guardian, Chevalier Compagni. Lunardi was secretary to the Naspolitan ambassador, Prince Caramanico, to which circumstance his presence in England was at this time due. Illis letters were written in a flush of excitement; or, as he says, "under the impressions of the various events that affected the undestandingle."

#### LETTER I.

MY HONGERED FRIEND,-

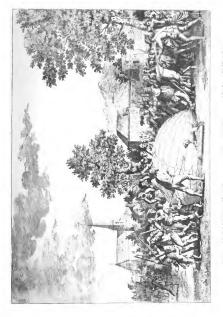
London, July 15, 1784.

The innumerable instances of kindness I have received from you, and the respectful affection it has impressed on my mind, have insensibly led me into the habit of giving all my interesting thoughts and actions some reference to you, and making your opinion and antisfection necessary to my happiness.

You are well apprised of the general offect which the attempts to perform aerial voyages in Fissee, have had in Europe; but you may not know that the philosophers in England have attended to them with a silence, and spparset indifference, not easily to be accounted for.

These two nations emulate each other in all circumstances. And the progress end advantage of numericums are not watched on either side with greater anxiety and glosoupy, this a discovery in science, or as improvement is fine arts. This has the happiest offect, as it is accompanied with a liberality and candeur that do booour to human nature,

The first rumeurs of aerial voyages were so swollen by the breath of faue, and the imaginary advantages to attent them, so rapidly and plausibly multiplied, that the genine of English philosophy, which, since the days of Newton, has borne the palm of science, clouded her brows with a kind of sullenness, and perhaps feared for a moment the accessancy of her sister.



The glory of a discovery is indivisible as the atoms of Epicerure; and in respect to aerotation, it remains and must remain with France. It is supposed, and I speak it on better authority than runsour, that some of the most attestive and penetrating observers in England medicate such improvements of Aerotatic Palloon, and such modes of applying them to see, as may give them an equal claim to glory with their philosophical rivals in France. Dut this has not hitlerto been attended with any remarkable effects.

You will possibly wonder, that in such circumstances, at my age, with the numerous engagements and oversitions of my office, not yet distinguished in the records of science, and but little known in a country so enlightened as Englend, I should have the ambition to be the first man who visited its atmosphere.

I have already acquisited you with the project of our friend Zamboccuri, and the reson of its failure. Little dissponitanests and errors are often the means of instruction. I proceeded in a different method, and conceived the design of interesting generacity and humanity, in the patrunage of an experiment of some humand, particularly in the hands of a foreigner.

At the distance of two miles from this metropolis stands a measurest of liberal and predent charity, efter suggested (or it is said) to Churles II. by a licentious woman. It is the hopital of military invalids at Chelors; an object of national attention; and managed with a respect to the intentions of the successive princes who have putroniced it, and to the health and comfort of the meritorious veterans who inhabit it, which are not common in national institution.

This bailding consists of three sides of a spacious quadrangle: a garden sloping before it to the shore of the Thanes; the vale extensive and fertile, and bounded by hills greatly rising, highly cultivated, and beautifully marked with villas, charches, and villages, all indicating the oppleance and felicity of the inhabitory of the inhabitory.

This I have fixed upon, in my mind, as a picturesque and propitions spot; and I wish, as it were from the altar of humanity, to ascend the skies.

I have, therefore, addressed the following request to Sir George Howard, governor of the hospital:-

"Mr. Lassall has the honor to orquant Sir George Howard, that he intends to construct on hir Rulenon, in which he will assess for the approx of reading mean intending personalization. But previous to he suggisted in a set previous an antertaking, he wishes to be asserted of a place for banching it, to which see he satered for a place for banching it, to which see he satered for a place for banching it, to which see he subscribed not be admitted. If Sir George Howard will inhalps him with his permission to learned it from Leidean garbone. Mr. Lanardi proposes to devote whatever now second the expense of the anti-triking to be divided using the invalidation of the product of

The King of England is distinguished for an attention to the ninutest variation in the state of science or the science of an empire, to which extent and unwideliness alone have been an inconvenience, the science of an empire, to which extent and unwideliness alone have been an inconvenience, do not presentable to personal nation of any remarkable character, or his correct examination of any selective event.

He has had the condescension to attend to the first probable intimations of a successful experiment with balloons, and the governor, with His Majoaty's approbation, has granted my request.

I know your friendly and parental boson will have some emotions at the opening of a design, by a youth whom you have so long cherished and loved, which leads to glory through some encertainty and some danger. But my resolution is taken, and you know, within the bounds of this, nothing can shake it.

When I write to you, though at such a distance, I discharge a duty. It seems to have the effect of my usual methods of countility gos. I Johain my own approbation, and collect frames and resolution, because the perhaps I haim you fifted itself and the same and the

Good night, my dearest and best friend, communicate my intelligence to my sisters, &c., and believe me to remain your obliged and affectionate

LETTER II.

VINCENT LUNARDI.

### MY DEAR FRIEND.

If know your anxiaty to learn the progress of my undertaking.

Loadon, Angust 2, 1784.

Nother my foctuation to make registers of my indertaking.

Nother my foctuate nor my economy have ever allowed me to be in affluence; I therefore enter on any business requiring expense with some disadvantage. In Italy I should have sought the patronage and generosity of my

Soverige, or of some liberal and updatet subdeman, for make me to restain the expanse of my present notestraking. Here would it some expanyl difficult, and lay so contrinues that one gravily the cruisely of the people, some of some year immediately collected, without the anxiety and nontification of prifitioning the great. This has, in some someway, basically subtracting from England; I as inguissions man as prehaps the better researched, and ere as framedered drives to the purposes and outprice of patrions. Here are insumerable collabilities, which are above; open in common, solve his has a means of circulation, convertison, information, and trilligh, above thousem it every other common, and which are means of circulation, convertison, information, and trilligh, after the above in every other to the convertion of the contribution of the convertison of the contribution of the convertison of the contribution of the contribution of the convertison of the contribution of the convertison of the contribution of the contribution of the convertison of the contribution of the convertison of the contribution of the contribution

To proceed in my design I have been chilged insolyes this content. You will not be oftended that a secretary to an embary coldable its hallous, who per but been first of their critiss in the mixing, matter the immediate protection of the King, and incorporated into an another, exhibit their jettime youtly, and that the price of admission to see shifting. This reprices rule there our fresh resoluted a year to the income of the Another, and is neither an incorrections nor a dishotour, where the diffusion of wealth through the lowest make resolute the whole nation the governal person of small designs.

In the centre of London, and in a street called the Strand, because it runs by the edge of the Thames, there is a large room constructed for the exhibition of pictures, by the first acciety formed in England for the encouragement of painting and compture.

Italians viewed this accity, and every other of a similar kind, as the Emopeans do the establishment amount consideration in America. The English had been encounteed to sord their youth to Buyle to karaji and so much of the fine are as weall enable them to purchase and insiste its productions. At this time there are sames in England which are equal in regulation to any in the world. This, lowever, is greatly owing to the partonage affected by Illia Majort, who has instituted an academy for endpure and painting, and who is himself the best ringer in his domination of the orderictions of his artition.

The institution of the Academy gradually weakened and destroyed the Society, and their room has since been fitted up for a species of entertainment which no country ever produced but England; that is, a debate on political subjects, continued at random by any man who would pay for his admission, and speak so as to answer but summally. In reference to this entertainment, it was called the Lyceom; and in that Lyceom I cabibit my halloon.

As the minutest step I take is interesting to yeu, I shall send yen some of my proposals and advertisements just as they appear.

#### " ADVERTISEMENT.

"I take the liberty to acquisit that I have undertaken the construction of a globe of thirty-work eit in diamostr, with which I intend to second, as now as completed, to make the most interesting experiments, especially that of going many miles before the wind, and keeping the globe constantly not higher than a gun-shot, previous to my constructing the great machins for direction.

Sing abody involved in great expense attenting the contraction of so large a globs, made with the best citied sill,—the filling is with infamanish at it is mashing by the expensions, they—in an oblight ob silling with infamanish at its measuring role to expensions, they —in an oblight oblight consistence of the liberal possestor of ingeneity; is an antherduling of so curious a nature. By the important in latter rapper to loads inverted. It pose to meath of allowers of great public utility; and persons to require will have the goodness to known row with your support and subscription; as approbation of my scheme are have been goodness to known row with the contraction of the procession of the precidentity of the contraction of the contraction of the precidentity of the contraction of the contrac

"The gallery, care, and wings are already made, and to be seen at the Lycoum, Exterc-Change, Strand, where the balleon is not constructing, and will be finished in about a fertinglist; with which, when completed, I need to set off from Chelson Hospital Garden, having already chained His Majosty's patronage, and Sir George Howard's permission.

"Spheriptions are taken in at Mr. Deberté, Bookseller, opposite Burlington-bone, Freedilly; Mr. Booker, Sationer, No. 50, Now Boodstrert, Mr. Barnes, Bagnerer, Coventry-strete, Hignarder, Br. Adama, Mathematician to Hie Majesty, No. 60, Fleet-street; and also at Mears, Nairrae and Blum, Mathematical and Thilosophical Instrument-makers, No. 20, Cornhill, opposite the Boyal Kachange. Which Mr. Lenardt will give his receipt for.

"The guines subscribers will be admitted into Chelsea Hospital Garden, and have a chair near the globe the day of according, and may view the construction at the Lyceum four different times.

"A half-guinea subscriber will likewise be admitted into the Garden on the above day, and also be accommodated with a seat on benches, next to the chairs, and admitted twice to see the construction of the machine,"

The probability that my design would be executed produced, what hardly any recommendatory letters or other common means of intreduction will do in England, I mean an acquaintance with persons of merit and consequence. England is open to all the world, either in war or peace; and a man of talents, whether liberal or mechanic, cannot fail of support and encouragement in proportion to his merit. But it would be wholly useless to hring to London such letters of recommendation as would in any city on the continent cuable a man to run through almost all the houses in it. Here the predigious resort of atrangers has nearly destroyed that indiscriminate species of hospitality which prevails on the continent; and which, while it may be agreeable to those who travel to get rid of time, has not sufficient utility to atone for its inconvenience. But when once a circumstance in the situation or character of a stranger has attracted the notice of an Englishman, and he has declared himself his protector and friend, it is worth a thousand of the civilities of general hospitality; a reliance may be had on its sincerity; and the friendship is permanent in duration as it is slow in growth.

Sir Joseph Banks is among the first persons who have taken notice of my design; and he has honoured my subscription with his name. The reputation he has acquired as the first betanic collector in the world; as the friend and companion of Captain Cook, in one of his voyages round the globe; as the President of the Royal Society, and the general patron of knowledge and merit, renders any account of him to you unnecessary.

My subscription, however, comes in but slowly; nor has the balloon, though larger, constructed of better materials and on better principles than any that has yet appeared in England, excited the curiosity I expected. This is partly owing to some ridiculous exhibitions of the kind which have been had at the same place, and which have diffused a disposition to incredulity and suspicion.

My balloon is composed of oiled silks, of which five hundred and twenty yards are inserted in alternate stripes of blue and red, which give it a very lively and pleasing appearance. Its form is spherical. The horizontal dimension of it is thirty-three feet; its circumference one hundred and two. It is kept suspended, and at present is filled with common air only, which I inject with hellows, through tubes of oiled sifk that pass through its sides. More than two-thirds of the globe are covered with a strong net, from which depend forty-five cords, forming equal sections on its lower part, and uniting at the bottom. These will be fastened to a circular frame, that forms the upper part of the vehicle in which I mean to perform my Acrial Voyage. It will be furnished, likewise, with wings and oars; the use of the former is to excite air when the globe is becalmed, and thereby to move it horizontally; they have the form of large rackets, and are covered with loose flounces of oiled silk. The onre, which differ from the wings only in size, will be worked with a vertical motion, and are intended to offect a depression of the machine; by which I here to be enabled either to check its ascension, or to descend without the necessity of letting out the inflammable air.

I exhibit these, not only as matters of curiosity to persons who have not seen or understood the French experiments, but to point out to those who have the peculiar object of my enterprise. For I have the ambition to be the first not only to visit the English atmosphere, but to ascertain the practicability of rendering the balloon stationary, or descending at pleasure by means of oars, acting vertically, and superseding the use and necessity of valves. In this only circumstance I aim to deviate into originality from the splendid and successful track of the Frough philosophers,

There are two methods of filling a balloon for ascension; and it is remarkable, that the method first discovered and executed by Mesers. Montgolfier, is the most hazardous and difficult to apply to use. It is effected, as a chimney is heated, by a common fire; and a balloon of this kind is a moving chimney, closed at the top, made of light materials, and raised by the elasticity which is always given to air by fire.

This requires a constant application of fire to the contents of the balloon, which is a difficult operation; and the least error in the application may be the occasion of consuming the apparatus and endangering the lives of those who trust to it.

I have chosen inflammable rather than clastic air for my guide. It is a substance produced by the action of vitriolic acid on motals or semi-metals, and is similar to that vacour (carburetted hydrogen) which takes fire in mines, and carries terror and destruction wherever it approaches. This you will say is changing one hazardous instrument for another; but the chances of setting fire to the clastic balloon, or of not applying the heat so equally as to answer the purposes of ascension, are numerous; those of exploding an inflammable balloon arise only from timuder-clouds, and, if proper situation be paid to the weather, they are not numerous or difficult to be avoided. It selection, inflammation due to be avoided. It selection, inflammation are being selected in the machine must of course be proportionably larger in the use of the latter than in that of the former.

My design to two inflammable six has been the evention of my sequalitation with Dr. George Pordyce, a physician of outsiness, a lectrizer in featurity, and probably the first chemist in the inflam. I consider this as a very formanc circumstance; for, besides the improvement and satisfaction I derive form his friendship, he has offered in the historic manner to fill the belone in a model which is a singurerance to that of the Portune dorfered in the historic manner to fill the belone in a model which is a singurerance to that of the Portune of the contract of the property of simplests size. This is the of equilies, that all produced by the tribules and such that there is the lightest of our that has been yet when

But in the localing incidence of this even of any life, I must review among the happiest my introduction to Mr. Eggin a, sugge neutrona distinguished by his livid, benchine, and fetures of integered and expant accomplishments, a strong lower of science, and of a liberal and affections to heart. This young gentleman, in the first days of our exquisitions, capacand with the accompany to its input second. And not be regional litterable to with a sum amony, and Mr. Eggin's calculates no matrix and engaging, I have accepted his offer. The vyang will by this circumstance, be referred more interacting; we shall derent or particular activation of different slighties, and, in any of those incidents which accept may be redered more interacting; we shall derent committee and multiply our jey, or learned are constructed activation for applications.

I am, &c., Vincent Lunardi.

## LETTER III.

My reas Figure,

The oversite of this extraordinary island are as variable as its climate. You here experience the extraordinary aland are as variable as its climate. You here experience the extraordinary of selevation and dejection, as you do of heat and cold in a shorter time, and in a greater number of occurrences, than in any country I know in the world. When I work you had, everything relative to my undertaking wore a

favorable and pleasing appearance: I am at this moment overwhelmed with anxiety, vocation, and despair.

On advertising my intention to go my with my halloon, it was natural to suppose that any latent analytion of
the same kind would show itself, and perhaps pering farward to series the applicance attending the execution of such
as catesprice. I do not my that this would into have disappointed me, but it would not have left me in any

situation of distress like the present.

A Proceduma, whose same is Moret, and who may possibly have assisted at some trials at Paris to hench
halloons in the manner of Mongadifier, advertised as it were in competition with me; and fixed on a day for
ascending with his halloon, previous to that on which I had the permission of Sir George Howard to make my
extension from Chelow Howital.

To hasten my own undartaking would have been entering into a ridiculous race with Moret; and if I had been inclined to such a mesure it was probable that the day appointed for me would not have been changed without a better races than could have been assigned from the competition. I therefore writted, with an mode patience as I could command, the event of Morat's caperiment; imagining, however, it would fall, from a view of the halloon; in this wips on proprehension of anch consoquences a might involve my disappointment or my rmin.

On the 11th of Angust his advertisements assembled a company of three or four humbred persons in a Galest at Chaless; and, unfortunately form, at a small distance from the Hospital where I was permitted to exhibit. The gurdens and fields around the place were crowded with fifty or sixty thousand people, not so much from commany as increditly and amplicion of the undertaking. That was greatly owing to his nanner of anticipating my design, which there on his and are, undescripely, the imputation of importance.

From one to four echock the company waited with patiences the filling and accession of the balloon; and when every effort was access to fall and the halloon sake into the few which expanded it, its numb rushed in certain in a thousand pieces, robbed many of the company, levelled with the ground all the fewers of the place and neighbourhood, and spread doubtains and turrer through the whole district.

I saw into many of the consequences which would affect my own undortaking. Though the people of England and comparatively well-informed and enlightened, yet the multitude in all nations is nearly alike. The mi-fortune of Moret was attributed to imposture; and a suspicion of a similar nature was extended to me. I felt all the statements of the similar nature was extended to me. I felt all the statements of the similar nature was extended to me. I felt all the statements of the similar nature was extended to me. I felt all the statements of the similar nature of the s

immediate inconveniences of guilt, as you will see by the following copies of letters; though nothing could be farther from my thoughts than any intoation to be concerned in an imposition:—

" Str.,
"Cholaca Hospital, August 14, 1784.
"It having been represented to the governor of this place, that a riot was occasioned by an attempt to raise

an Air Ballon in this neighborhood we Wesheady hat, I have his orders to equival by on attempt to mass an Air Ballon in this neighborhood we Wesheady hat, I have his orders to equival not that it is impossible he can, as any consideration, subject this College to the insults of a mul; and at the same time he directs use to say we disagreeable it is to hinte terfuse his concent, but that his determination is nanlreably faced. I have the honour to be, Sir, &o.

"Www. Businity."

" WM. BULKELEY."

On the receipt of this letter I waited on Major Bulkeley, and, describing the hardship of being involved in the conceptances of the faults or misfortunes of another, I prevailed on him to represent my situation to the governor. In consequence of which I received this final resolution of Sir George Howard:—

"Size,
"Cholese College, August 17, 1784.
"I have this moment received a letter from Sir George Howard, in answer to one I wrote to him on Monday

hat, there I had the however on earth grain by colong irrowing, in ancient to the University to the American and American

" I have the honour to be, Sir, &c.,
" W. Brigger,"

W. BULKELE

I am now smk into the utmost depth of distress. Though I gay be said to have no reputation to loss in a kingdow where I am searcely known, I yet experience the most regionant meritidation at seeing my loopes destroyed, and myself, in the alightest degree, suspected of anything is consistent with bonour, and an artlest love of science.

You will say it is an imputation on the character of an sellightened kinghon to prigidige an experiment which has not been made, opeculing at propose to dought what has been proved to be precisional in Prance. I have already told you that corrything respecting Air Ballooms has been admitted here with reductors: the prompous accounts of Franch vargues are credited, after making place allowances for called variety; and all hypothenes respecting a certain and world application of the discovery are considered as reasonate visions. This promossion, however, does not percent judicoplement and use of theore here from discoving the percentaging of everything flats has been effected in Prance. But they are not much more numerous in the than in other parisons; they do not always registant the epithics of the people, so, fin, this case, they are not very discovered on the production of the properties of the Digital against Pinnes is suffered to have in full effect on anyther them. The animal peopletic of the Digital against Pinnes is suffered to have in full effect on subject from Prenducting and ayman being that of Konjenjen, very exceedable plearness in the people have pleas and the production of the product

impositions.

I am apprehensive, therefore, I must relinquish my undertaking, after an expense which my circumstances
can ill bear, and when the satisfaction and glory of accomplishing it are just within my reach.

Adieu, my dear friend, I regret the necessity of leaving on your mind the melancholy impressions which this learnest make. You may depend on it I shall conduct myself in every event with a proper recollection of your solicitude and regard for me. For I shall ever remain

Most sincerely yours, VINCENT LUNARDS.

#### LETTER IV

My nonouned Fairno, London, September 14, 1784.

I still have hopes: for what philosophers dare not attempt, the ladies easily accomplish. They can smile into acquiescence that uncouth monetor,—public projedice; and they regulate the opinions and manners of n nation at pleasure.

By prevenence amids the difficulties and supposed dangers which aurusted me, in consequence of the failure of Moret, has given no an air of teach until whip on how interests the fair ser. The Lyeons, therefore, is revoked with company, and particularly ladies, who take for greated I am to second; many of them with I were not engaged law. Beinglich, that they sightle excountput use; and with that betweining any of simentry where he considered the second of the country, and which I think more difficult to resist than the copacity of any when the second of the country for my selectly, which the easy determination; and I when located, if the is from the storie,

The keanrable mettins have a pleased to make of ms, and of op endocrous to present selected year-configure the experience, and the liberal system with which has acid, and which desinguish in the lateral experience of the liberal system of the liberal system of the liberal system of the lateral system of the lateral system of the lateral system of the liberal system of the lateral system of the

lu consequence of this grant from the Hononrable Artillery Company, l published the following advertisement:—

"Grand Air-Balloon, with which Mr. Lenard and an English Gentleman are to ascend ento the Atmosphere.

"M. L. Caraza is extremely larger to fact it is his power to inform the politic fact, in consequence of a spilitation made to the Homosonth Artilley Company, by I now here a bit is no to accommand their in with the now of their ground. For the purpose of executing the experiences he has undertaken, with this condition amount, that he shall pay one handred primare, to be added to the changing for the challenge of the Bear Bernard Treaser. The very healths and herovolent metric which influenced the Homosonthe Company to make this demand, was of heelf very health and below the contract of the contract

from them, and particularly for the favour of resolving in appear maker arms, for the purpose of preserving order and repulsively on the fallow less flesheaded. It has the highest seems of this power day intend him, and the additional midstellan of coqualiting the public last the other excurse leading to and from the Ground, as well as the entitle of a part, will be particularly by the originate of the City Militia and the present effects in our law of the account for the farther from the contract of the contract of the second to the Artiflite's Ground oncy and convenient in his admirrhar, and to all others who may be really as the contract of the contract of the Artiflite's Ground oncy and convenient in the admirrhar, and to all others who may be really as the account of the Artiflite's Ground one of the Artiflite's Ground of the Artifli

"As Mr. Lunardi is desirous to prevent confusion, he has determined that no money shall be taken at the gates of the Artillery Ground, or any person admitted without tickets, which are now issuing at the office adjoining to the Lycews at one guince, bulk-quines, and five shillings.

"Tickets, which have already been delivered for Chelsea Hospital Garden, will admit the bearers into the Artillery Ground."

At this time spounds of twenty thousand persons had attached the childrion of the balloon and apparatus the Lyceure, and all had to oded the proprietor of the now, but had reside the money, and whis had node such a bargian that the premniny advantage was to be his, and the banard and how to be mine, would immediately analise me to full in a gragarant with the Artilley Company, and remove the balloon and apparatus to the Ground. But I was mistaken. There are men like sharks, who, by devouring, seem only to be rendered insatiables, and those more are not preclaif to the Orden's action.

If there were not a probability that these letters may appear in England. I, would bey open the whole of this transaction, and the scharter of the man with whom I unfortunately became connected. But though the Papilits board of the liberty of the press, they usiny it with such receptions as an difficult to be unfortuned by a stranger. Inside it is not unfortuned by the measure, for they are our heldung the milky. One of the exception is the intensity of the complete of the exception is the suggested of a link. Sufficient for the press of the press of the liberty of the exception is the suggested of a link. Sufficient for the first press of the law. It is possible, heavever, that this collection flavory (Lord Mandald 3), being at the load of the Kingle Bends, may only win to wrest from the press the adjudication and load, let of an all the possible respective distinctions in the adjudication and load, if or an all 1, by consider a finite present the description of the letters of the public spread of the letters of the public and the to-outher received to integrit calculation and the letters of the letters of the public spread of the letters of the public spread for the letters of the lett

What is do in these elementances I was at a loss to imagine. Petiges, agistation of mink, and that kind of shows which attends a through of possiles, overwire-invaluary, induced us to send an applicy the committee of the Artilley Company, instead of entiting on them appeal. Conceiving this an attempt to decrive them, they rescaled date former resolution reporting the opporations of them on moder areas, and other disc manner than the facing and preparing the bilinoise which had been sent to be thereon each their bigle the baseling generals the invalid of the sent of the company of the company of the contract of the company of the preparing might be done to the premises.

Difficulties generate difficulties. The mas at the Lyneam, apprind of the two-briston of the Arillery Campay, locked up ya kilono and apparatus, and declared they could serve be reconsequent util I consigned to him as noisty of all the possible advantages which my present and fotor outerprise of a similar kind might produce. Moderne operations might have relied on E. Zeemen's majulate rooses and interest the generous and humano. My one was soon known; I was enabled to send the amony; fire Waltin Lowin and Mr. Kirvan were kind ranging he to soon scentifies to the Arillery Compay. The magnitudes of the place took as moder their kind ranging he to soon scentifies to the Arillery Compay. The magnitudes of the place took as moder their in to the Arillery Greened on Tensely, the first modern and the second to be a similar of the second that the second the produce of the second the second to be a second to be a similar of the second that the second to be a se

Behold no-I was going to say-but I should be extremely sorry if you were to see me, exhauted with fatigue, anxioty, and distress, at the ove of an andertaking that requires my being collected, cool, and casty in mind. The difficulties thrown in my way have postponed all my preparations; and indisposed and oxhauted as I am, I cannot avoid paying such attention to the operations of this night as will allow me but little sleep. Doctor Fordyce is applying his ingenious apparatus to fill the bulloon. The process is admirable, though slow; but, I hope by attending to it all night, I shall keep my appeniument with the public temorrow.

Adieu, my honoured and respectable friend: my health and spirits are injured by a series of unfortunate and cruel incidents, but if I succeed I shall be shundantly rewarded. I am, &c., yours,

### LETTER V.

Venerat Lunardi.

My max Farzen, Looke, Washingt, H.

The amplicion morning is arrived, and I will write the occurrence of it as they wise, but say of these proposed approaching ceretain me which have heigh hanted my darkges. I have no apprehension but of the supposed approaching ceretain me which have heigh hanted my darkges. Have no apprehension but of the other darkges are present and the proposed of the contains; and dischards, in every degree, as pushable with the same pretor of lapitude. The prescribability of the experiment, though perfectly known to pillum-phere and men of interes, in which will be proposed on the but being proplace to cornex, at the rick of the resembne and velocises which SH Green's liberal did not schoos to recorder, even at the band of the version of the British energy which have made the concessor and the contribution of the British will present them who would with the concessor are from centring the goots. An errorder, and which will present them who would with the

There o'Cock.—The view from the upper spartments of the Artillery House, into which I sometimes retire, is striking and extraordinary, and serves to animate my imagination for scenes more extensive and picturesque which I shall soon survey.

The fear of the populace, in case of a disappointment, has, as I expected, prevented my having much company in the Artillery Ground. But the windows and roofs of the aurrounding houses, scaffoldings of various forms and contrivances, are crowded with well-dressed people, and form a singular, and to me very interesting spectacle. They have viewed for hours, with fixed and silent attention, the bustle around the apparatus, and the gradual expansion of the balloon. On my left, in a square, or rather parallelogram, the largest I know in Europe, a part of the populace of this immense place is collected into one compressed and impenetrable mass. The whole would suggest to a tyrant the idea of a pavement of human heads; but I conceive the risk of going up in my balloon triffing, compared with that of attempting to walk on the living enrisce I now contemplate. One hundred and fifty thousand countenances have all one direction; but I have reason to be anxious not to disappoint such a multitude. every one of which has been wedged in a painful situation the whole morning. You will think me whimsical, perhaps, in fixing my imagination at this time on a public institution of any kind. The principal area which contains the populace is bounded by an extensive and noble building, devoted to the most compassionate and affecting of all the offices of benevolence. It is a retreat for the in-ans who are not judged incurable, and it is called Bediam. The arrangement, extent, and wholesomeness of the spartments, the assiduity and care of the governors, physicians, and apothecaries, and the unabating liberality with which it is supported, render it an object of universal respect. The figures of Frenzy and Melaucholy at its gate are celebrated throughout Europe, and are deemed barely inferior to the admired productions of Greek sculpture. Which of these allegorical beings the people have assigned as my patron I have not learned. I suppose they may be divided; but they agree in the propriety of making my attempt near Bedlam, as the event, in their opinion, will render it necessary to convey me there. How happy should I be if some kind spirit would instruct me to emulate Astolpho on bis flying horse, and to explore those regions where the straying wits of mortals betake themselves! But this is not a time for even benevolent reveries, and I indulge them in any degree to repel nawelcome apprehensions.

Half yler One.—The time fixed for my departure is chapsed, but the halloon is not mifferently filled for the purpone. The populses have given some intimations of imparisance, and I may yet be pre-judged before I make my attempt. The presence of the Prince of Wales, and the obvious antifaction with which he vaws the progress of the preparations, may remove the suspicion of deceit, and restrain the imperiously of the people. The condescending affidility of the Prince, and the interest he deligns to express by repeated whiches for the adety of

<sup>\*</sup> Vide Arionta's 'Orlando Purious,' where the English knight is said to have mounted to the meca, to being back the wits of Orlando, Query, Are not the fabbes of flying horses, dragous, fire, presumptions that the principle of air-baltoons is not a modern discovery? (See p. 14-14 of the work).

Nr. Biggis and no, are planning alleviations of my present saxioty. His Boyal Highests remains some the appearants, without gaing to the company in the hones. Those when stated him pay their court, and I does not express their real residencies by saxieties for his acity. They approximal diagraps from the appearant and flow tournals. In Bryal Highests apprehens about 6, for he is welly better informed, asks, synatories with more independentering the state of the state

Friday Evening, 24th September, I was this morning to have been presented to the King, but the anxiety and futigue I had endured axhausted

my strength and spirite in such a manner as to occasion a violent fit of sickness, which confined me to my bed, and deprived ma of the honour and astisfaction I had promised myself on the occasion.

This is the first moment since my excursion I have been able to take up my pen with the probability of giving you as account of it, and I am determined the post shall not go out this avening without it.

A little before two o'bede on Wedneeday, Mr. Biggin and myself were prepared for our expedition. His attention was allotted to the philosophical experiments and observations, mine to the conduct of the machine and the use of the vertical cars in depressing the balloon at pleasure. The insustance of the multitude made it machinals no proceed in filling the balloon, so as to give it the

form it was intended to have. On balancing that from with weights, it was supposed incepable of being map. When the gallety was antened, and Nr. liggin and I got into, it, the matter was beyond ulbeit; and selected Nr. liggin fit the most regret in relimptishing his design, or I in being deprived of his company; it may be difficult to determine. But we were before a tribunal when, an institutenous decidence was necessary, for hostation and oblay would have been construct into guilt; and the displacemen impending over ne would have been final; if the one moment has had not had been fine to relimption, and it for receiving to my observable.

This event aginted my mind greatly; a smaller gallery was substituted; and the whole undertabling being develved on me, I was preparing scenningly, when a sevent beingth are word than an accident had belefishe hallow, which would prevent up intended varyon. It between down, almost deprived of my sensor; and though substituted the property of the pr

At five minutes after two the last gun was fired, the cords divided, and the halloon rose, the company returning my signals of addies with the most unfagned archamations and applaumes. The effect was that of a miracle on the multitudes which surrounded the place; and they passed from incredulity and menace into the most extravagant expressions of apprehation and joy.

At the height of twenty yards the balloon was a little depressed by the wind, which had a fine effect; it hald me over the ground for a few seconds, and seemed to pause majestically before its departure.

On discharging a part of the ballast it accreded to the height of two hundred yards. As a multitude lay one of a hundred and fifty thousand people who had not seem my secont from the ground, I had recourse to overy stratages to be these know I was in the gallery, and they librally rent the air with their acclamations and applaises. In those strategiest if devoted my fing and worked with my cars, one of which was immediately broken, and fell flows me. A pigoon, too, exceed, which, with a dog and cat, were the endy companione of my extension.

When the thermosener had fallen from 68° to 61° 1 perceived a great difference in the temperature of the dir. I became very cold, and found it necessary to those few planessed wine. Illkwise set the leg of a higher, but my bread and other provisions had been rendered uselsen, by being mixed with the sand which I carried as bellut.

When the thermometer was at 50° the effect of the stamosphere and the conditation of circumstoness around protected a claim digitely, which is incorposition, and which as situation on earth coding time. The stillness extent, and magnificance of the occus, rendered it highly artifi. My britan scened a perfect circle, the termimizing line sowred limited males in circumsterness. This I conjugated from the view of London, the extreme points of which formed an aught of only a few degrees. It was no reduced on the great scale before me that I can find to simils to correct year blook of it. I conditionity with N-100 and other chromics from the bosons. I are the streets as lines, all anisoted with beings when I keev to be next and women, but which I abmid totherwise have bed as difficility in door-ling. It was an encurous belavity but the infinity of it was suspected. All the moving man seemed to have no object but specif ; and the transition from the negation, and, pulsape, ousteapt of the proceeding here, to the affectionat transport, administra, and gloy of the provers insensity, was not without the apprehensions and materies of the Artillory Ground, and felt as if I had into behind as all the corre time processing that the contraction of the Artillory Ground, and felt as if I had into behind as all the corre time processing that the contraction of the contraction of the Artillory Ground, and felt as if I had into behind as all the corre time

Indeed, the whole scene before one filled the sized within a shill may because, of which I save held a enception.
It was not possible for me is been each in a situation as from from apprehension, I had not the alighbest sense where the possible for me is been each in a situation as from from apprehension, I had not the alighbest sense whether it was against or trappill, not be alighbest sense whether it was against or trappill, not be a generator or diseases.

I had not the alighbest sense whether it was against or trappill, not be a generator or diseases are alighest as the earth. I never do it is a great that the alighbest is the same and the sa

He was the first, perhaps, who realised the beauty of Shelley's chorus :-

Closdines sties and windless streams, Stient, liquid, and wrone; As the birds within the wind, As the fish within the wave, As the thoughts of man's own mind Float through all above the grave, We make these our liquid hir, Voyaging cloudlike and unrent Through the boundless element.

Thus tracepill, and thus situated, low shall I describe to your a view such as the assertions supposed Jupiter to know of the searth, and to copy which there are to terms in any longuage? The gradual dismission of objects, and the masses of light and shallow, are indelligible in oblique and common prospects. But here everything were can see appearance, and that a save effect. The few of the country lad a milk and permanent reducts, to which linky is a strateger. The windy of entire terms are seen to the strateger in England of good offer likes and in outputs the similarity and review measurings; the sea plice terms are the strateger in England of good offer likes and in outputs indirectly measure protect with eights, were written to see a little strateger in the region of the search of the search in the search of the search in the search of the

To prolong the enjoymont of it, and to try the effect of my only our. I kept myself in the same parallel respecting the earth for nearly half an hone. But the exercise having fatigued, and the experiment having satisfied me, I hald aside my our, and again had recourse to my bottle: this I emptied to the health of my friends and

<sup>\*</sup> In some of the papers, wittieisms appeared on the affinity of Lunstic and Lunardi.

benefactors in the lower world. All my affections were allre, in a manner not easily to be einceived; and you may be assured that the sentiment which seemed to me most congraid to that happy situation was gratitude and friendship. I will not refer to any solter passion. I ast down and words four ragios of dissultory observations, and, plaining them to a naphin, committed them to the mild winds of the region, to be conveyed to my bosoured friend and pattors, prince (vinancias).

During this luminous I had accorded rapidly; for, on heaving the report of a gas fired in the Artillary Coronal, I was indeed to examine the termonenter, and foosi it had falles to \$27. The hallow was a make inflated as to assume the form of on ebeing spheroid, the abortest dimenter of which was in a line with no, though I had accorded with in the shape of an invested coro,, and examing nearly search with of its fill complement of air. He'ring no valve, I could easy open the neck of the hallown, thinking it havely possible that the strong marketion might force out mose of the inhumable sit. The constanced vapour around its neck was frown, though I found to inconvenience from the cold. The cort at this point opposed like a homallows plain, whose surfaces had vinguist tables, but not within two object could be accountry distinguished.

I then had recourse to the utmost use of my single our; by hard and persevering labour I brought myself within three hundred yards of the earth, and, moving horizontally, spoke through my trumpet to some country people, from whom I heard a confused noise in reply.

All half after three circles I, descended in a correlated, on the common of South Minnas, Heritorholius, where I landels the act. "The poor mains had been savelilly affected by the odd during the greatest part of the regage. Here I might have terminated my excensive with anti-faction and honor to sayorly, for, though I was not destitated a smithable to be the first it ascend the Eighli at surprised way. As we see that the Eighli are sense as the experiment of the second properties of the second properties of the second backgrid at most real to the second and any anti-faction was array great in having power in mility. The futgees and anti-ryl have codured magnitude and the second properties of the second properti

My general course to this place was something more than one point to the westward of the north. A gentleman on horseback erproached me, but I could not speak to him, being intent on my re-ascension, which I effected, after moving horizontally about forty yards. As I ascended one of the balustrades of the gallery gave way, but the circumstance excited no apprehension of danger. I threw out the remainder of my ballast and provisions, and again resumed my pen. My ascension was so mpid that before I had written half a page the thermometer had fallen to 29°. The drope of water that had adhered to the neck of the balloon were become like crystals. At this point of elevation, which was the highest I attained, I finished my letter, and fastening it with a corksorew to my handkerchief, threw it down. I likewise threw down the plates, knives, and forks, the little sand that remained, and an empty bottle, which took some time in disappearing. I now wrote the last of my despatches from the elouds, which I fixed to a leathern belt, and sent towards the earth. It was visible to me on its passage for several minutes, but I was myself insensible of motion from the machine itself during the whole voyage. The earth appeared as before, like an extensive plain, with the same variegated surface, but the objects rather less distinguishable. The clouds to the eastward rolled beneath me in masses immensely larger than the waves of the coean. I therefore did not mistake them for the sea. Contrasted with the effects of the sun on the earth and water beneath, they gave a grandeur to the whole scene which no faney can describe. I again betook myself to my oar, in order to descend, and by the hard labour of fifteen or twenty minutes I accomplished my design, when my strength was nearly exhausted. My principal care was to avoid a violent concussion at landing, and in this my good fortune was my friend.

At twenty minutes past four I descended in a specious needow, in the parish of Standon, near Ware, in Hertferdshire. Some labourers were at work in it. I requested their anisatance; they exclaimed they would have sothing to do with one who came in the Davit's house, or on the Davit's horne (I could not distinguish which of the phrases they used), and no extractise could prevail on them to approach mo. It also away divirences

Attentations of particular circumstances in this letter have been received alone it was written, which the reader may see assured, in
the manner of an Appendix.

to the spirit and grammely of a feasible. A young woman, who was likewise in the field, both hold of a cord which that there was in, and, calling to the new, they yielded that antience to her require which they had printed units. A crowd of people from the neighbourhood son assembled, who very obligingly antiend no no fallenthard in securing the holton, having oblived no es hornbook from Loubin, no did several other gentlemen, amongst whom were Mr. Cano, Capital Teamer, and Mr. Vright. The followants had been then printed under gentlemen, amongst whom were Mr. Cano, Capital Teamer, and Mr. Vright. The followants had read to be ten they had include and produced a must officiaries after high the size of the spirit control of the registrometry of the spirit was no committed to the care of Mr. Vright. The obligingly officed his service. It has proceeded with General Smith, and several other gentlemen, in the field line at Ware. On my arrival I had the issuer to be a set all hypicides of the spirit o

The general course of the second part of my voyage, by which I was led into Bertfonlshire, was three points to the eastward of the north from the Artillery Ground, and about four points to the eastward of the north from the place where I first described.

This is the general account of my excursion. I shall take a few days to recover my strength, and whatever particulars occur to me I shall send you.

VINCENT LUNARIDA.

#### LETTER VI.

My ORAR PRIENO,

I should at this time have as much difficulty in describing the effect of my success on the whole English union as I had in conveying to you as idea of the approblemsion and distress I folt last any untoward circumstances should prevent or defeat any undertaking.

The interest which the speciations look in any copying was no great that the thinge I there does were clivided any proserved, as one profes would relief or the most circlestric states. And a gentlewoons, mistaking the not for my person, was no affected with my asproad-description that she died in as for days, This fectomestance being meantment of a bringley, when I had the bound or disings with the placey, Level Myore, Henricher, and Shertlife or a second of the state of the state

I mention these things, is thay may prepare you for the reception I was becomed with on my return to Leadon. No voyager from the most interesting and extensive discoveries, no conqueror from the most important victories was sever inquired for with more solicitude, or welcomed with greater joy. The hones of Prince Curamanico had been be sieged by multitudes, early and late, to have some account of my astery, or to applicad my return.

You may suppose when I came to town I hastened to Caramanico, who received me with avery mark of affection and condescending friendship.

Here circumsances of gratulation and juy crowded on me avery hour. I was fattered by learning that while I howered over Leadon His Majordy was in conference with his principal Ministers. On being inferred that I was possing, the King said, "We may remove our deliterations on the subject before neat pleasure; but we may never see poor Learning again." The conference broke up, and I its Majordy, attended by Mr. Pitt and other great officers of states, viewed on through telescopes while I remaind on their horizon.

I had received insults which I thought cruel by persons whose houses overlooked the ground, who creeted scalloids and let out their roots, so as to depiric one of a chanced having my expenses deflayed. I was no some returned hat seem of these people hatesteed to atome for their misupprehatmon of nor. They had considered and treated me as an impostor. My secession, is a charm, dissipated their ill opiaton, and gave thom an enthusiasm in up favour. I am offered the boses and excitability for any own ms, if I shows to exhibit again. These things down the importance of armson in all understands which are not temptedly understood by the multirated. In an introduced not only into private families, but introduced not only into private families, in the part of the private families, and fastively make the private families of the private families, in the contradiction of the private families of the private families of the private families of the private families of the private families. Developed private between all excentioning provides for their support, and by the tensor of their plane, which is during good behaviour, and a proof all periodic for their support, and by the tensor of their plane, which is during good behaviour, and a proper discretization of the private families and of critical the intensities to the samples for the private families and of critical the intensities to the color of the private families and the private families a

My flow ho not been sparingly differed by the newspapers, which in Daglond are the boundaries of public opinion; than errosense, as other intervants as in, their practical information, but yielding the both that enle delained. Vest will insight the lost partners of these vehicles of knowledge, when you leave that in Louison and where prediction from their hashed anticky thousand person workly which, by assenge much person. They are to the English constitution what the occurs were to that of ascisted Rems. Ministers of Stote are checked and per in we by them, and they freely, a disten judiciously, copyon the pretonious follows where with the properties of the state of the sparing of the sparing of the principal reason of their extensive circulation in the information and extensions either good and exposite people, who we be closure and inclination to better of themselves and extensions of the grade and exposite people, who we be closer and inclinate in the contension of the sparing of the sparing of conveytures and a public occurrance. On this account the conductor of twentyperso size every operatingly of conveytually and the sparing of the sparing them, we the description of the sparing them are the sparing of the sparing of

I have reason to thank the managers of all the papers for their candour and partiality to me. I send you as account from case of them, written and published within a few hours after my descent, founded only on immediate observation and ecojecture. You will thereby form your opinion of the attention and industry employed in these prints on all similar, and indeed on all interesting occasions, and you may answe yourself by comparing their conjectures with facts.

"From 'The Morning Post,' Thursday, September 1670, 1784.—Lunard's Aerial Excursion.

"To combat the prejudices of a nation, and the incredulity of mankind, especially when deterred by examples of resentment in consequence of deception or misfortune, when awed by the danger incurred in experiment and the uncertainty of success in the project, must certainly require the greatest effort of hunan resolution. Whilst we are recollecting the occasion, which collected one-teath of the inhabitants of the metropolis within the optical powers of an individual, we cannot help indulging ourselves in these eccentric reflections. The serial voyage. which has long been proposed by Mr. Lunardi, was appointed for yesterday, and pethaps the English nation never witnessed upon any occasion whatever such a number of persons collected togother and so bythly displayed as were to be seen in the environs of Moorfields; not a plain or an eminence, a window or a roof, a chimney or a steeple, within the view of Bedlam, but were prodigiously thronged. About half-past one n'clock the Prince of Wales arrived in the Artillery Ground, and after receiving the salutations of the gentlemen of the Artillery, though not is to militaire but en obvirunce cap-d-pis', his Royal Highness having expressed a wish to dispense with military attontions, he viewed the apparatus of the balloon and retired to the Armoury House, which was occupied by persons who had liberally paid the adventurer for their admission. We were sorry indeed to observe that such general advantages had been taken by the neighbourhood of farming their windows, and for benefits which were due only to the nevelty and spirit of the enterprise. About a quarter before two o'clock the balloon was sufficiently filled and closed, and the gallery and other apparatus prepared to be suspended; but on Mr. Lunardi and

his intended companion, whem we understand to be Mr. Biggin, a young gentleman of fortune and enterprise, having taken their situations, and finding that the machine was unequal to their weight, it was determined that Mr. Lunardi should ascend alone. A cannon having been fired as a preparatory signal, Mr. Lunardi, having ombraced his friends, and all matters being adjusted, a second cannon was fired as the signal of ascension. Insensible must that heart be which did not feel itself anxious and interested at that moment for the fate of him. whe intropidly stepped into his seat, and, Phacton-like, seized the reins which were to guide the chariet of the sun. About five minutes after two o'clock the machine was lannehed; and as if dreading the course it had to run, and anwilling to proceed, efter having mounted about twelve yards, it reclined to its native earth; hat roused by ambition and the spirit of philosophical researches, Mr. Lunardi rebuked its fear, and gave its swiftness to its airy flight. He took his seat in the gallery with great composure and confidence on the balloon's being launched; but finding himself too equally poised, he readily discharged part of his ballast, which consisted of small bags of white dry and, and by that means relieved his weight and caused a regular and most beautiful ascension. After be had cleared the buildings, subject to the direction of the easterly wind, he saluted the populace with great elegance and gallantry by waving a blue flag, which he had taken for the purpose, and seemingly hidding them a friendly adies, The gallery was formed of an upright four feet square, and nested with a strong cord, about breast high, but enite open at the top. After this salutation, for the space of five minutes he dropt his flag with an air of security, and having scated himself, took to his oars; but as we since learn, finding they compressed the wind too much, he discouraged one, which was taken up about Smithfield; at that time his friends were alarmed for the consequence.

Steering at this moment due work, he suddenly utched towards the north, and with little variations, according to the additional be children, little here and begives to establish and direction, his progress second exceedingly observed and eveilt, although the halloon approach under materity management. We twent the depth, never-thicken, chinnely for so hear and averay instants, with a nature of anxiety and design, for an additional content of the state of t

Such were the incidence of systechay, and we heartly with that the effects may be valuable to the projector. Every Explainman shared field an emittation to revared this; for nexterin as the good to be obviously from such as commission may be thought, yet it becomes the noblems of our rature to encourage them. Discreptions keyward the reach of humon comparabilistic at prosent may be preservence to exceepinghed. Emission and industry and adds which is due to protectivy, and he who shrinks from innovation in a chi to country's friend. Exceepinges in the property of the contract of the contract of a child, we have emphasizedly been characterist as height in instruction, which is the contractive of the hander of a child, we have emphasizedly been characterist as height instantess, wherein the contractive of the contrac

On the Sunday immediately after my return I had the honour of waiting on Sir James Wright, who had been politely solicitons to give me testimenics of his approbation. He had the goodness to represent to His Majesty

Equally happy non, with freedom share.

Equally happy non, with freedom share.

The common joy. The shepherd-boy forgots. His bleating cone; the absoring hald less fall. His grain names in immagnet lest, he robs. Th' experting furnow, and in with sames. The guting village point their spen to heaven.

that I wished to lay on account of my voyage at His Majesty's feet, who appointed Friday for my attendance at St. James's.

On Wedneshy Sir James Wright both not to court. The drawing-room was very crowded, it being the austrawary of the King Chemation. I was unremeable with the ministers of situs and in collisity, when the Prince of Wales entered the drawing-room. My process was printed out to him by one of the Secretaries of State, on which he said in the Delay and familiar manner which is peculiar to him, "O Mr. Instantial," I as very glot in see you allow." As a proof of the standard of this anisoble Prince, I must be type showe be distinged in the homora to see you allow." As a proof of the standard of this missible Prince, I must be type throw be did no the homora to see you allow." As a proof of the standard of this missible Prince, I must be the homora to see the England of the root of the prince of the standard of the prince of the whole the proof of the prince of the prince of the prince of the prince of the root of the prince of Wales could be ready, and taking out his own, presented it can be in the kinder that which was relored by the Prince of Wales could be ready, and taking out his own, presented it

The rumour that I had sunk a considerable sum of money by the adventure was soon circulated, and subservines have been opened in several parts of London for my advantage; but with what offect I must not yet presume to indige.

But you will wonder, perhaps, that I should finish it necessary on this consists to become an author. Suprises accounts and interpresentations of any exercision, have been published by booksheder of some consideration been. They have been reproduceded freely and perhaps severely by my publisher, who is very warm and anchoos from yintern, and who suggested to some the pain of raving and publishing my there to you, as recensurtio the representation of my understaking, and likely to be conducte to my advantage. He is a man of spirit and judgment in the predomics, whose mans is starley finalist to you and all the world by his complete and boundling clusters and a starley will not be doblocoused. His is non-salienting the attention the fluider confidence that under his direction are extensive will not be doblocoused. His is non-salienting the attention of the public sourch as resellities of "bibliopresis" with the bibliopress. He is no produced gas startents of the public sourch as rearelation of "bibliopress" with a visible startent of the produced produced and the construction of the public source and the public source and the produced produced and the condition of "bibliopress" with a visible startent of the produced produced and the contraction of the startent between the contraction of the public source and the public source and the produced and the contraction of the public source and the produced and the contraction of a nearly being and the public source and the public source and the public source and the public source and the public and the public source and the

Most of my time is see when my with the calchition of the balloon, and indeed of myrelf; for the principal centricity is to see my at the Patadow, which see not the largest and most aprically more in Drope. It is didcall to lunigate anything more pleasing than the relicities which multilates of resulful women express concerning changes that are part, and the horism of relar who wis its accompany no in my second our. I recrive the compiliration and comparabilities of two or three showand persons in a day. You must not wonder if I conceive an option of my own consequence suit becomes win. I have been made as theorem; sensitive of the Artifleton Company, in whose material accompanied Sir James Wright this morning, to by before Ilis Majorty a short account of my consequence.

I was received in the most gracious manner. The King took my account, talked to me about five minutes on the subject of aerostation, permitted the usual honenr of kinsing his hand, and I took my leave.

I have led you, my dear friend, through my apprehensions, difficulties, and anxieties, to the completion of almost all my wishes respecting the first attempt I made to place myself on the records of fame.

It has been no small assistance to me that I have ever wished not to dishonour your care, advice, and friendship; and it heightens every gratification that I can always subjoin

I am your sincere and affectionate friend,

VINCENT LUNARDI.

Having wrote zeveral letters, while on my excension in the atmosphere, I had several inducements to employ myself in that manner. It proved the asteinling cornense and smoothness of the motion; and, by the wing down any information of myself, there was a chance of its falling into the hands of my friends, and relieving their enziety concerning my sufer, and the state of my spirits and mind.

I threw down several to the same effect with the following, one of which was very obligingly conveyed to

me by — Carimajor, Esq., who found it, not very far from the milestone on Northaw Common, while ont a shooting. I have collated my own copies, written with a pencil; and the following letter is inserted, as an additional proof of the felicity with which I performed the whole vorage:—

### Addressed to may Person or Persons who may pich up this Letter,

#### MY DEAR FRIEND OF FRIENDS,

To analyty which my computators showed at my departure makes it necessary to starse them that my situation is, at this mount, the happiest of my life. The relief of my usin, and the compulsation of my purpose, which I now no is practicable in all respects, concer with the temperature of the siz and the magnificance of propuest to sook and guild my mind with the highest shight. The dermoments in at 50° and 1 will keep myself in this station till these electric; I shall then ascend higher, to try the effect of a different serial climate, as well as to part up or to a fair trial.

I beg the person or persons who may take up this lotter to take notice of the time and place, and to convey either the lotter or the contents of it to my kind friend and patron, Frince Ceramachice, No. 56, in New Bondatroet, to Sir Joseph Banks, Sobo-square, or to Dector Fordyee, Executives, to whom I have many and great collisations, and who may have the condenses to be concerned, if they whosh lower learn I an cheerful and well.

I am particularly anxious that the earliest information of me should be given to George Biggin, Esq., Essexstreet, the loss of whose company is the only obstoment of my present joy; but I hope for that pleasure another

My desire to correy some news of me is from an opinion that my descent may not be effected innectiately, or within the distance of forty or fifty miles. In that case I might not be able to convey them any letter or message in time to savnt them measures on one yearcount. It is now exactly three effects, the air has a mildness and sweetness I never experienced, and the view before me is heavenly. Happy England! I see reasons to half the possible falling.

Farewell, Vincent Lunardi,

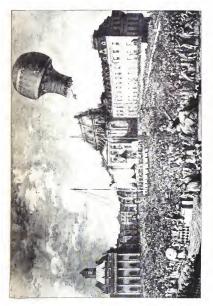
### To VINCENT LUNARDI, Esq.

Six,

I tend you this hy my servant, that I may learn from yourself what I am extremely anxious to bear, that
you health has not suffered by your late failigues, that your balloon errived in London without injury, and at the
same time to acquaint you with the further steps I have taken in your business.

Yesterlay mering I made to the very spot where your balloon in its passage touched the ground, and where your ext was haded, and with the assistance of several people who were witnesses, particularly of a person whom you may received to have been near the balloon at the time on horsebook, and of the very girl who picked up gauge and, have accordant the place with a calidistic precision. The projected out the part also where your graph danggord, and mentioned some other circumstances, the most of which I propose to collect into a formal deposition, and shall attent these again to sky to obtain their gove solemen confirmation of the fact of mentions of the fact of the proper obtains of the proper obtains of the proper obtains of mentions of the fact of the proper obtains of mentions of the fact of the proper obtains of the proper obtains of mentions of the fact of the proper obtains of the p

Yesterlay, it my request for of the lorvest-none, motioned in the departition of Elimboth Brett (which yes have will you satisfaced in here, and have in the same formal mode depend to the time, memor, and placed your but descent, and to the fact of their coming in the anisomous of Elimboth Brett, is study by the This discovery, as class, however, we think against the same of the same of



Your general course from the top of of your departure, in the Artillery Granal, to that of your fine decent, was ensurising more than one point on the compase to the workness of the north, and the general course of your second-reyage was three joints on the compase to the southered of the north from the place of your first decent; observed, Papek of your general course, with a reference to the best maps which laws by mc. What deviations or constraining more than laws from the interved the mark from the place of your first decent; observed, Papek of your general course, with a reference to the best maps which laws by mc. What deviations or extremely no make him and from this so their in that thoughes, you contribing must be some demancy, our till best judge,. As a proof of this, you will recollect that the field in which the last letter with the best namered was from, like about one so like and is not all and for the second, thick and the power where you finely only the properties of the second that the designation of the properties of the second that the designation of the power was provided and the designation of the part of the second. It enters must have been were, with a park to the second. He can design the second in the yellow per or consideration.

With respect to the identical page on which you must the two decembs, you may wish in know the literal fact.
That where you misk your first decemb, this is where you guiller come to the ground, and where on term to which you get out the east, a is apreprincipled field belonging to shell literate, Dass, of Guidaina, in the compy of the contract of t

The place of your final descent is imperfectly described in Elimbeth Brett's deposition, but is in fact, as there stated, in the partial of Standon, about half a mile to the northward of the twenty-four mile stone, on the read that leads from Leadou to Cambridge, through Ware and Pueberidge.

If you wish to have any further conversation with me on these matters, I can come to London conveniently after Wednesday next, and will attend you with pleasure, if you give me notice.

The enclosed scrape of paper were found in the field where you first descended, near the part where your grapple took up the corn. Whether you throw them from the balloon you will recollect.

I have no tidings of the two first letters; probably to-day I may hear something of them, as I shall meet many persons assembled from different parts of the country.

Adieu. Most sincerely yours,

W. Baken.

#### DEPOSIT

The voluntary Declaration and Deposition on Onth of Nathaniel Whitehead, of Sanaley Bar, Farmer, in the Parish of North Minna, in the County of Hertford, Yoman.

This deposent, on his ods, suith, that being on Webnesdy the 15th day of September instant, between the house of these and four in the afternoon, in certain field called large, in the parish of Next Minnes afternial, but provided a large mechine sailing in the sir near the place where he was on herebook; that the machine containing to appeared the earth, the part of in in high his deposits prevent appears in the site of the provided and the provided and

them to desist, and the machine moving with considerable rapidity, and clearing the surth, west off in a north direction, and continued in sight as a very gave height for more in hour afferwards. And this deponent fermions with, that the part of the machine is which the general near the part of the machine is which the general near the part of the state of the part of the process for more than inflar a ninest, during which these the general near the very an appeal of what prepared to the deponent and process of the part of the part of the part of part

NATHANIEL WHITEREAD.

Sworn before me, this 20th day of September, 1784, William Baker.

The voluntary Declaration and Depositions on Onth of William Harren, of the Parish of Hatfold, in the County of Hertford, Labourer, and of Mary Butteriell, of the Parish of North Minms, in the County of Hertford, Spinster.

This deponent, William Harper, on his oath saith, that as he was mowing oats in a certain field called Etna, in the parish of North Mimms, in the county of Hertford, on Wednesday, the 15th of this instant September, between three and four o'clock in the afternoon, in company with Thomas Blackwell, Thomas Moore, John Richardson, and several others, he perceived a large machine hovering in the air and gradually approaching the ground near the boundary-line of the manurs of Northaw and North Mimms; that on his approaching the machine, in company of the persons aforementioned, the machine, which had then passed the said boundary-line, touched the earth in the said field called Etna. And this deponent, being then at the distance of four or five poles from the same, plainly perceived a gentleman in the lower part of the said machine, dressed in light-coloured clothes and a cooked hat, who, on the machine touching the ground, threw out a parcel of dust or white sand; that immediately the machine mounted again into the air, and went off in a north direction; that while the machine continued teaching the ground, Mr. Nathaniel Whithread, who was likewise present on horseback, desired this deponent and the rest who were present to stop the said machine, which some of them, and in particular Thomas Blackwell, attempted to do; but the gentleman desiring them not to stop the machine, thay desisted. And this deponent, Mary Butterfield, on her oath saith, that she was raking oats in the said field called Etna, on Wednesday the 15th of September instant, between three and four o'clock in the afternoon, in company with Mary Crawley, Sarah Day, and others, and perceived a large machine hovering over Northaw Common, and approaching the earth in the field where this deponent was at work, which at length it touched in the said field called Etna; and during the time that it so touched the ground a kitten, which was in the lower part of the said machine, came out on the field, which this deponent picked up, and soon afterwards sold to a gentleman who came up to the hedge-side. inquiring after the machine, which he called an air halloon. That this deponent plainly perceived a gentleman in the lower part of the muchine, dressed in light-coloured clothes, who, on the machine ascending again, spoke through his trumpet, and wished them good-by. And these deponents, William Harper and Mary Butterfield, severally, on their ouths, say that the muchine which came down to the earth appeared to consist of two parts connected together: namely, that in which the gentleman was appeared to be a framework of wood and netting, from which there stuck out a sort of wing; and the other part of the machine appeared in the shape of a large pear with the stalk downwards, and appeared to be made of silk or capvas, in stripes of green and red. And this deponent, Mary Butterfield, further, on her oath, saith, that when the machine was ascending from the ground, she, this deponent, perceived an anchor or grapple drag along the ground, which took with it a small parcel of the oats from the field where they were raking,

WILLIAM MARY MARY MORE.

Sworn before me this 20th day of September, 1784.

The voluntary Declaration and Deposition on Oath of ELLEADETH BERTT, Spinster, Servant to Mr. Thomas Read, Farmer, in the Parish of Standar, in the County of Herix.

This deposent, on her oats, with, that on Wednesday the 10th day of September instant, between four and few clocks in the eighterms, should as presents, being these at work in his material relevances, sheaf as an account and local locis, which, on attending to it, also consolved to be the sended of non-insighing as they returned from a second control of the contro

ELIZABETH M BRETT.

Sworn before me this 16th day of September, 1784, at Bayford Bury, in the county of Hertford, aforesaid.

The columnary Declaration and Depositions on Oath of Joses Landton, Jose Chives, James Crantlay, Edward Bentley, William Walley, werefully small this 17th day of Spender, 1784, lefter William Bares, Esq., one of His Majorly Justices of the Peace for the County of Herford.

The said dynometo, on their each, severally dealers, that on the 15th of this instant, September, between four and for cycleds; in the afference, height gets as work, some of them in the harvestfolian and others in the françous of Menne. Benjamin Bishlame and James New, in the parish of Stonder, in the county of Herefred, they new a lange and anomanous moduline horwise in the sin, which they servantly Bisbowell till review of a sensition and any and the size of the size

Sworn before me this 17th day of September, 1784, at Bayford Bury, in the county of Hartford.

A gentleman well known in the literary world having sent Mr. Lunardi the following epistle as a compliment to his genius and outerprising spirit, Mr. Lunardi's friends have strongly expressed their wishes to have it annexed to these letters, and the author has obligingly given permission to have it printed with them.

### AN EPISTLE TO SIG. VINCENZO LUNARDI.

Excuse it, bold Yoush, if a stranger should dare To address thus Four Highwar as Kron of the Air, For I was a winess, a charmed one, I own, When you sprung to the shies, and seconded your throne

A.D. 1781.

Amid two hundred thousand good people assembled, Who felt for your fame, for your safely too trembled; Whilst you, a true Hzao, of nothing afraid Took leave of the world, and mankind, undismay'd; Determin'd to bid every danger defiance For the poblest of conquests, the conquest of Science, When you bid us adies, and first quitted the earth, To what varied sentiments cave you quick birth? Each mind was brim full of unnumber'd strange actions, Each eye all attention, to watch all your motions. The multitude scarcely believ'd that a man With his senses about him could form such a plan-And thought that as Brut.an was so very nigh You had better been there, than turned loose in the sky! But when they perceiv'd you rose higher and higher, O'ertop'd every building, each church, and each spire, They extell'd with one voice your superlative ment, Who could hazard your life with so dountless a spirit, With benevolent wishes each boson now burns, And Asse and Amsterney both fill it by turns .-"Where's he going?" cries one,-"Why he shrinks from our

night 1
And where's data poor follow to quarter to-night?
And where's data poor follow to quarter to-night?
And where's data poor follow to quarter to-night?
If I'll maybe by formation to may did the Movie.
I'll I'll maybe by formation to may did the Movie.
I'll I'll maybe by the Movie of t

In their own way of thinking, all fiels, and all reason'd, threely Allocasans policyld that yeer fields was ill sesson'd, threely Allocasans policyld that yeer fields was ill sesson'd, the profest indifference the Barty award. It is been given the profest to allor most the Barty award. It sheeting, And fortil before with that your bair would want developed the the Lancen, all east, such titled without in all, and the state of the state of the state of the state of the Arrocastras were parabel low more they could wan you. It can arrange what promisin they'd now the to Do yee, While the allow-faced date of his Moneys so find Daniel Villence, he were Bart fire your Bond.

Amid these remarkous which moved in below Through the remain of pure Ether telemphant you go, A counse which no mortal had here before durfd; For Yor, was the risk, and the plere prepared; Though depriv'd of that Parason who had negle the food chilm To portable all your diagons, and alson in your fance. From all homous add though cut off, and alone, When mounting this nigely, you still greater about 1—

Ab 1 tell me LUNARDI,—hereafter you may? What new scenes of wonder your flight most display? Though currents anticle, and from cloud to cloud diffing? With what neer its separe mind must evident. With what neer assuming some from must glow!—With what new assumings power boom must glow!—With what new assuming to the control of the control

The abodes of the Great not discern'd e'en with winking,

Tis the points whence we view things which fix, or create

And the THAMES but a basin for lap-dogs to drink in .-

How awful the feel, when through new regions gliding,

Our imperfect concessions of Little, or Great! An adventurous stripling, so sweet Ovio sings, Had the boldness to sour once on two mighty wings, Unguided by judgment, and wand'ring too high, He met his just fate, and was plung'd from the sky And all that the world from this tale have been able To learn, was, it gave false Ambition a fable.-But from flights such as yours we've resson to hope Philosophy one day may gain wider scope, The secrets of nature are slowly reveal'd. Though much is discover'd, far more is conceded, A spirit like yours can assist best the caus And more clearly illustrate ber motions and laws ; But should not to you the great lot be assigned To establish new doctrines of air or of wind, Should future Adventurers still further rove, And parening your course, your discovities impro-Yet know, GALLANT YOUTH, that to uone but to You Will in Excland the praise, and the triumph be due, In the First bold attempt so intropid who shone, And show'd by Exemple how much could be done. Our country will gratefully boast of your name And LUNARDI be plac'd on the bright scroll of fame, With the warmest acclaims of the Puntac applauded, By PRILOSOPHERS lov'd-By the Must too recorded !-

A midst all three honours, a stranger who fit'd By what he beheld, what yourself have impir'd, Reund your temples while this little tribute he wreaths, Thus with seel his ford wishes prephetic he benthes, Long only Th' Annua. Thuseux you now sit on I And live, all long live,—The Coursers of Burner!

We again take up the Cavallo narrative of these early experiments; he says, that,

On the 19th of September, at Paris the ballow was filled, in three heart time, by M. Vallett; the two M. Babers and M. Collis Ballett medies into the best, and, with the addition of there banders and filly possible of ballett, they were preferely balanced. At some they there cut trensty-four possible of ballost, in consequence of which they plans to the very goalty. At that that memory in the barriers on the level of possible of ballost, in consequence of which they plan to the very goalty. At that that mannery in the barriers of the level of possible of ballost, in order to avail going against some trees; in consequence of which they run to 1100 feet. At this clearston, precripting some strong desides and we have heart possible provision and the second provisi

current of air which might carry then out of he way of the storm; but from 600 feet beight to 5200 the current of air was quite uniform. Having lost one of the one, they supposed another on the opposite side of the best, and by working with the remaining three found that they accelerated their course. "We travelled," any their assemular than the contract of the contract of the contract of the storm of the storm of the storm of the storm is about a think? After primation part three viries they head a fundaries, and three mixtures store they bend another, much offer the storm of the st

The rest of this reyage being twy interesting is bot described in their own weeks—"We perceived below us one clouds that were very registly from each to sent-k. We foresteen the table best disconsists of the control for the control for their own between the sent that the control for their own between the control for their own between the control for their own between the control for their own their

When they descended, which was at forty minutes past air of ocks, there were above two hundred possible verigin of holists will premaining in the best. The way they had bratefully was about fifty passes, or one hundred and fifty male. The account of this reques is concluded with the following remarks:—"Those experiences above that, for from giving against the wirds, as it will by more persons to be possible, in a creatin manner, and some sermonate period to have actually done it, we show only obtained, by means of two core, a derivation of \$2°\$. It is, become a superior of the contract of the contract of the contract of the winds; as and as or meadows would have been explain of carrying arrea persons, it would have been only for the wind; as and as or meadow well have been explain of carrying arrea persons, it would have been only for the wind of the contract of the

"We have already observed, that if we did not deviate more than 22", it was because the wind carried us at the rate of twenty-four miles as hour. And it is natural to judge, that if the wind had been twice as strong as it was, we should not have deviated more than half what we actually did; and, on the contrary, if the wind had been only half as strong, our deviation would have been proportionably greater."

Arestatic Experiments made in the remainder of the Four 1784.—The record artial vyrage made in England was performed by M. Blanchard, and Mr. Shiddon, Preferenced by M. Blanchard, and Mr. Shiddon, Trebesor of Anatomy to the Royal Academy, who is therefore the first Englishman that ascended with an acrostatio machine. This experiment was performed at Little Chebeo, about two miles distant from London, on the 164 of October.

We have already shown by the mention of Mr. Tytler, that our narrator's information on this point is not correct. Mr. Monck Mason, also, in his careful researches in 1836, discovered that Mr. Sadler had ascended from Oxford, on the 12th of October in this year.

At nine minutes past twelve o'clock the balloon ascended, but, after a few feet elevation, it returned again to the ground; it hit likewise against an adjoining wall, and, in short, the boat was loaded with too much weight. This shipped the two genthence to throw our zerved things that were of an immediate use; in consequence of which the machine as let two now it great rechelled paths of proceedurilary, and cole to come anonly south-wave. The weather being hary, it went some east of sight; but a long as it remained in view it superarch to ge in one invariable direction. The bulbons, make the contain long the weight of two presses, long to descend after barring been up about half as hour. As the bonometer was out of order, in consequence of an accidental hise, N. Blacchard would so ingestions and at at less men time seen particular of shearing whether the balloon was seconding or descending. It was morely to put a vibro out of the bost, which, being implied sparsably by the air, aboved that they were obscuring. Su stand downy fathers madig that save this propose will better. The throwing down a both prolonged that' downer; but all as the demokraic alighted in a machow much which we described the signal downy fathers made in Conden; it being the wifty and the standard of the contribution of

In this second assention M. Blanchard's account says that he was carried at first by a torth-east current, and soon after, meeting with another current, he was carried assents the sat of Subsery; to finding the abilities to make the same of the s

An fifty-eight missure past ros, the cold being instourable, M. Blanchard descended a considerable deal lower, so not delitinguish para and host white proise on the costs. Some time self-the again ascended high than was becalmed for a short time; and thus, after averall orde-like visitatibles, he cause in sight of the sea, the approach to which a last determined him to put and on the veryogic and accordingly the descended, at the lower share few; in a plain which ky in the vicinity of Romery in Hampshire, about zeronty-free miles distant from London.

It was related in the newspapers that at Oxford, on the 4th of October, one Mr. Sadler ascended with a rarefied-air balloon; but, after strict isquiry, it was found that nebody asw him either ascend or descend. However, on the 12th of the following menth he really ascended, with an inflammable-air balloon, from the Physic Garden at Oxford, in the presence of surprising numbers of peopls of all ranks. The balloon being sufficiently filled by a little before one e'clock, Mr. Sadler placed himself in the boat, which was fastened by ropes to the net that want over the balloon. Then the machine, being abandoned to the air, ascended with such velocity that in three minutes' time it was hid in the clouds, but a few moments after became visible again; and thus it appeared and disappeared three or feur times, seeming always to ascend, and at the same time moving with great rapidity in the direction of the wind, which blew rather hard from the south-west. In this voyage Mr. Sadler crossed Otmoor, Thamo, and other places; but an aperture made in the balloon, almost as soon as it was launched, exhausting the inflammable air very fast, obliged him to throw out successively all his ballast, provisions, instruments, &c., and at last forced him to descend at Hartwell, near Aylesbury, which is about fourteen miles distant from Oxford; which length he travelled in seventeen minutes; so that he went at the rate of near fifty miles an hour. He found himself exceedingly wet in passing through the bravy cleuds, and in descending had the misfortune of being entangled in a tree, afterward swept the ground and rebounded to a considerable distance, but at last alighted safe.

It is said that Mr. Saller was the sele projector, architect, workman, and elemint in this experiment. On the 90th O'recember M. Blanchard much in fifth arrial veryer, in his debladers, being his second veryer in Lanken. He was excompanied by Dr. J. Jeffries, a physician, and mative of America, and successful from the Historian's in lawlateried, from some experiment was developed with a series of the matter of the property of very hary, the machine did not show so fine a spectacle as could have been wished. It does not appear that sither of the two travellers ands any particular philosophical observation, though the were provided with available and interments. They descended, near the Thames, in the parish of Stone, in Kent, at the distance of twenty-one miles from London.

Arrotatic Exprincate made in the baptisity of the Yer 1785.—On the 4th of January, 1785, Mr. Harper accorded with an inflammable in ballow from Brinnighans. The weather was very raise, harp, and egic and the barrosater stood at 294; the thermometer stood at 40°. At about a quarter before one vibrels, he seemed, in presence of an instrument without of reported are almost all very lear line, which increased to an memory degree for six minutes after; the line four minutes more the serial adventurer got above the clouds and enjoyed the virifying inflammes of the one and a person.

At about two o'dook Mr. Harper decensed at Millstone Green, near Newsaulte, in Staffechlabite, about fifty miles datast from Birminghau. In this voyage the thormoneter never canso lower than 2%, and Mr. Harper apprinced no other inconvenience than what might be expected to arise from the changes of wet and cold, except a temporary destrons.

We come now to the account of a voyage which deserves to be long remembered. It is nothing less than the crossing of the English Channel in an aerostatio machine. The same halloen which had carried the enterprising M. Blanchard five times through the oir served for this remarkable experiment.

On Priday, January the 7th, Joing a fine clear morning, after a very fixing right, and the wind shout northcontributes, but had promptible. All Rendson's, economised by Pr. Jeffries, departed in the shell hallow from Derre Carla, directing their course for the Franch coast. The hallows was began to be filled at about ten cleack, and, whilst the operation was going on, two small bullows was tendanced in order to explore the direction of the wind. The apparetre was placed at about feartness for distance from the perpendicular elift; and at threequarters after review clocks, the bast being attacked to the sat with when very well bullow, several necessaries, and some large of anal for bullow, were put in it. The bulloon and boat with the two orderatives, now stool winkin toy for 6t de their six of the oliff—and is lateral precipion on Engle where they habspares :—

And dizzy 'tis, to cast cost's systs as low! The cross and choughs, that wing the midway air, The cross and choughs, that wing the midway air, The cross and choughs, that wing the midway air, and the cost of th

At one o'clock the intropal Blanchard desired the boat to be pushed off; but the weight being to great for power of the power of the ballon, they were oblighed to there out at considerable quantity of ballar, it consequence of which they at last tree gently and majoritically, though making very little way, with only three sucks, or ballard, of the possible such. At a quarter after one o'clock the bannester, which on the efficient out of the possible of the p

At a quarter past two o'clock the rising of the merenry in the barometer showed that the balloon was again descending, which obliged them to throw away the remaining books. At twenty-five minutes after two they were at about three-fourthe of the way, and an enclanting view of the Prench coast appeared before their eyes: but the lower pole of the battoon was collapsed, in consequence of the loss or condensation of the inflammable air. the machine was descending, and they, Tantalus like, were uncertain whether they should ever reach the beautiful land. Provisione for eating, the wings of the boat, and several other articles, were encessively thrown into the sea. "We threw away," saye Dr. Jeffries, "our only bettle, which in its descent cast out a steam like smoke, with a rushing noise; and when it struck the water we heard and felt the shock very perceptibly on our car and balloon." Anchors, cords, &c., were thrown out next, but the balloon ctill approaching the son, they began to strip, cast away their clothes, and fastened themselves to certain alings which proceeded from the hoop to which the boat was fastened, intending to cut the boat away for a last resource; but they had the satisfaction to find that they were rising, their distance from the French chore was about four miles, and they were approaching it vory fast. Fear was now vanishing apace; the French land showed itself every moment more beautiful, more extended, and more distinct; Calais, and above twenty other towns and villages, were clearly distinguished. Their actual situation, with the idea of their being the two first persons who crossed the Channel in such an unusual vehicle, made them little sensible of the want of their clothes; and I doubt not but the sympathising reader will feel an unusual sensation of admiration and joy in imagining their situation. Exactly at three e'clock they passed over the high grounds about midway between Capo Blane Nez and Calaie; and it is researkable that the balloon at this time rose very fast, so that it made a magnificent arch. The balloon rose higher than it had ever done in any other part of the voyage, and, the wind increasing, varied a little its direction. The two adventurers now threw away their cork inckets, which they had taken for safety, and of which they were ne longer in want, At last they descended as low as the tops of the trees in the Forcet of Guines, and Dr. Jeffries, laying held of a branch of one of the trees, etopped their progress. The valve of the halloon was opened, in consequence of which the inflammable air got out with a load rushing noise; and some minutes after they came safely to the ground between some trees which were just open enough to admit them, after having accomplished an enterprise which will perhaps be recorded to the remotest posterity.

About half an hour after they were overtaken by some horsemen, &c., who had followed the balloon, and who showed every possible attention to the fortunate seromants.

The next day a magniferent feast, made at Calais, ademanised the avent. The freedom of the city was presented to M. Hauchard in a gold tox, and the Police of Calais wrote to the Ministry to have the balloon purchased and deposited, as a netsocrán of the experiment, in the church of Calais, and also design to erect a marble monument on the spot where the interpial abstracturers descended.

Some days after M. Blaochard received an order to appear before the King; and in a letter to Mr. Sheldon, the companion of his fourth arrial royage, he mentions that Hie Majesty was pleased to grant him a gift of 12,000 livres, and a penion of 2300 livres a year.

The most remarkable circumstance in the account of this voyage is that of the bottle, the striking of which on the water occasioned some agitation on the host and hallow. This deserves to be carefully repeated, at another concertunity, before we attempt an explanation of the photomeneous.

The places agreementing the same vary fact, or, which is the same thing, going very low whilst ever the same afting very high when it got over lank, sake each year weal present actional to a principle when it got over lank, sake each year weal present actions of the same-stare; but if the various circumstances which content is the experiment be obly considered, there execute to be no reason to be no reason to be not reason to be not reason to be in the same machine, it was found that the believe reads at support two zero large in the standarders; a content therefore execution we seem that it is not to appreciate the same part of the property of of the proper

A monument was raised on the spot where M. Blanchard alighted, with the following inscription:—

sons in mbown de louis XVI,
in de Laxixiv,
Jean-Pierre Blanchard des Andelys en Normandie,
Accompagné de deux Gefferies, Aughis,
Partit du château de Douvres.
Dans un sécontal,
Le sept janvier à acce beure un quart;

Traversa le permier les nirs Aut-dessits du Pas-le-Chilet, Et descendit h trois heures trois quarts Dans le lieu même oh les habitants de Guines Oot éleré cette colonne À la gleire des deux voyageurs.

And these verses record the feelings awakened by this incident :-

Deux peuples divisés your l'empire des mers Ne foet qu'ue sujonrd'hui en fracchissant les sirs. Présuge fortuné de l'enion nincère Qui duit réguer estre sux pour le bien de la terre. Autent que le Français, l'Anglais fat intréjéde : Tous les deux out plané jou-ju'no plus hant des ains ; Tous les deux, saus suvire, ont travené les mers. Máis la France a produit l'inventeur et le guide.

General Benerals en the provides History (by Comith)—The set of averaging throughbox six, suggist, after from time immensacials, have endinescent and on of improved within these two parents having frost platform promotions have performed the experiment, and not a single instance in known of any preson having best his life in the stamps; and, excepting two or three, who have been hard in consequence of accessbare—single, not to the principles of the invention, but rather to the wast of proper judgment—all have mansion-subject-lifed the active, one, and because of the experiment; and it is very remarkable that no man or weaken who are shall that the atmosphere by entirely of the experiment; and it is very remarkable that no man or weaken shall not the atmosphere by of ascerving high buildings, or of going in a best on water. It is justly questioned whether the first furly promotes who travoid descents to the set in thost encoped as sink.

The method, for from being complicated or tread-leaves, is perhaps as single as night have been wished by the warnest imagination; and no easy for the amount that he has a shortedly much be sentendle with his meaning than a sailor with a solid proper of the contraded with the meaning has a bar of the read-leaves forcy and figure has been, but we commonly at the near of their pails, and both deep near the tree of their pails, and both read-leaves forcy and figure has been, but we commonly at the near of their pails, and but only a solid pails and the solid pails from pails as place, then pails of the solid pails from place has place, the pails of the solid pails from place has place, the pails of the solid pails from place has place, the pails of the solid pails from place has place, the pails of the solid pails from place has placed and the solid pails and the solid pails are solid pails and the solid pails and the solid pails and the solid pails are solid pails are solid pails and the solid pails are solid pails and the solid pails are solid pails and the solid pails are solid pails are solid pails and the solid pails are solid pails are solid pails and the solid pails are s

Ignorance, carriedty, and dien the aspectitions wissions of the optentic, ask whether it is possible to bring this discovery is the of any new, and the warried of a desired assume, which it is not in the power of say must be discovered, askes used generally deside against air-balloons; emberwaring to deprecise them still further by the infellection beds of requirines, which has been den that night-order personed by the works  $\alpha \omega A_{ij} M \otimes d_{ij}$ , where  $i_{ij} M \otimes i_{ij} M \otimes$ 

The principal objection started against serostation in, that these machines cannot be guided against the wisd, or in every direction at planears, and the enuines of inscussions would set at older with let has disabloom, because, two years after their discovery, the subject has not been so far improved so to stere them in any direction valuescers. But at the electroper and the roll been so for improved so to stere them in large direction valuescers. But at the electroper and the production of the relationship to the product of the product of

As accessed, in the atmosphere, has two advantages which are very considerable; first, that if the wind loom and prove favorable, he may descend provided he in overdant; and secondly, a centre of all; going in different directions, have been very often observed at the same time in the atmosphere, the acrossat may, by accessing an electronic plan to a higher or been region, so with the current which is proper for him. Indeed, it is not known that those different currents always exist; but it is not unlikely that they, as has been the one with the currents of critical societies and arrivalization, and we have with the currents of critical societies and arrivalization, and we have with the current of critical societies when the configuration, and we have with the current of critical societies and materials made and the configuration are always and the configuration are not advanced the benefit projection, but the produce of experience, and in great measure of attention are not accessed to the configuration are not advanced to the critical projection, but the produce of experience, and in great measure outlands the passy instances in the preceding belong:

The incomparably greater velocity of an aerostatic machine, and its very solion or never loang time by being becaused; are likewise two advantages, which areastates has above averaginen. But an up object is to inform those who wish to know what has been done in this subject, and not to permude the wavelling, I shall conclude this chapter, and the First Part of any work, with a summary recognitionist of the none intensity portionates that have been accertained, in order to exhibit to the mind of the reader a comprehensive view of the sublect in a few time.

Two substances having been discovered to be specifically under higher than common sir,—smerty, a infammable are and common air when betted—largh begs have been formed which would contain so, quantity of those substances, as that the excess of weight of a body of common sir shows that of an equal high of sort infammable are ingish to persons than the weight of the bog or at lost expend to it; these logs, therefore, than filled, being lighter than an equal balls of the elemanablem air, do not in it, and are driven by the wind; and for the same reason, a piece of wood in a river fonts upon the ware, and proceed with the stream.

As air will not long remain botter than the autromoting medium, those bogs or hallocon, which are finite with tot air, must contain a fore qualther the beings that are indicatedly belt by which means they may contain to find an intellistic time; calterwise, in a very short time, the air in tham cooks, and they full. The other hallocon, which contain inflammable air, conclusion to fast the cage as sufficient quantity of that diract remains in them; so that they would find for ever, if the covolege did not permit any inflammable air to escape through its cores.

It is authensitially true, that the accessional power of balloon, or their excess of levity above on equal bills of common six increases incompanify factor than the properties of their distances. For increase, find a nirhalloon of a certain disnester can lift up into the atmosphere a weight of ten pounds, another balloon of twice that dismore (everything cless, set the felders of the stuff, dee, remaining the same) will find a power that sightly pounds, and a balloon of three times that disnester will lift up more than 270 pounds' weight. Upon their principle, balloon have been made of each a size a would acree you gas reported weight; in various parts of the world use have assembled with them, and have safely travelled through the air at the rate even of about fifty miles as how.

Wherever those experiments have been made, persons of every nata have gond with the greatest natively, and have shown unsequend under all ordiscludesters and sufficiency; the accessars, returning from their secret excursion, have been generally received with the greatest appliane, have been carried in triumph; mobile have been streed, and place expressed in the greatest appliane, have been carried in triumph; mobile have been streed, and place expressed in the processor where not distinguished times level in only performances, or of their particular experiments; premium and practices have been greated them by hence decidents, and be many gones persons, operably by the court of brane, whose particular data their processors, and the ever advanced operation of process of the superior land discreting people. These mankind, their contractions of the processor of the superior land discreting people. The mankind, thereover, "The visited sect of human scale in a processor of the contraction of the superior of the processor of the proce

It has been often discussed whether the preference should be given to the inflammable-air machines or to how raised by mount of both it. Back of them has in posuliar advantages and disadvantage; a just consideration of which seems to decide in favour of those with inflammable air. The principal compositive advantages of the marifet-lair billions are—their being filled with tiltic or no expense—their not requiring to be made of so

An instance of an acreatatic machine remaining in the atmosphere stationary for want of wind, has happened very seldom, and then
it has sever lasted above a few minutes. And everyloody knows that, in the entreet weather, the clouds slways appear to be in motion.







expensive materials-and the combustifiles necessary to fill them being found almost everywhere; so that when the provision of fuel is exhausted, the aeronant may descend and recruit his fuel in order to proceed on his voyage. But then they must be larger than the other sort of balloons, in order to take up the same weight; and the presence of a fire is a continual trouble, and a continual danger: in fact, amongst the many aerial voyages made and attempted with such machines, very few have succeeded without some inconvenience of one sort or other; whereas the aerial excursions made with inflammable air machines have all answered exceedingly well, and in but few instances have the machines been damaged, and then very inconsiderably,-But, on the other band, the inflammable-air balloon must be made of a substance impermeable to the enhible gas; the gas itself cannot be produced without a considerable expense; and it is not easy to find the materials and apparatus necessary for the production of it in every place. Nevertheless, an inflammable-air balloon of thirty feet in diameter, according to the present state of knowledge, may be made so tight as to be capable of keeping two persons, and a considerable quantity of ballast, up in the air for above twenty-four hours, if properly managed; and possibly one man might be supported by the same machine for three days; and it is very probable that the stuff for these balloons may be so far improved as to be quite impermeable to the inflammable air, or nearly so; in which case, the machine, once filled, would continue to float for a vast while. At Paris they have already attained to a great degree of perfection in this point; and small balloons have been kept floating in a room for many weeks without losing any considerable quantity of their lovity; but the method of preparing the stuff is still kept secret. However, there seems to be no great difficulty in making small balloons so very tight; the difficulty is in the large ones; because, in a large mechine, the weight of the stuff itself, the weight end stress of ropes and boat, the folding it up, &c., may easily crack or serape off the varnish in some place or other, which is not the case with small balloons.

As for the decrease of this inflammable air, it must be observed, that divers experiments and observations show that a matted of obtaining it is comparably cheeper in not for from being accratinately, and included there are several manufactories in which abundance of inflammable air is daily produced, and but for want of the area several manufactories in which abundance of inflammable air is daily produced, and but for want of the area of the several contributions of the several proper too coding it; it that is in this light because kevers, there can be no doubt that means will be contrived to preserve it, wherever it may be abundantly produced; so that we may aboutly expect to see repositories of inflammable air, where one may no fell is ablusion for a certain such loss for a certain set.

In regast to philosophical observations, derived from the new subject of servantion, there have been very for make; the newly of the discovery, and of the proport evaluation from the gallery of none in gallery of an eventation makes he generally distracted the attention of the neumants; and heaties, many, if not the greatest number of the new order lavagate, though and the les proposals made for the improvement of reisers, we performed by presents associately introduced to the contract of the contract of

The agreeable stillness and transpillity experienced up in the atmosphere has been a general observation.— Some machines have sended to a great beight, even a for a two sulles; they have generally poststated through for goad clouds, and have enjoyed the virifying bast of the ran, while the earth beneath was extently occured by dense clouds that poured adamelance of has.—In seconling very high, the aromants have other experienced a pain in this rans, arising from the sit; within a certain earity of those crapsa, being not of the same density as the attential arity both pain parently worst of noor after—Time is one experient recorded, it which the sit of a being bright, being brought down and transimed by means of nitron and; was frand to be pure than the contract of the contract the contract of t

Having just mentioned the electricity of the atmosphere, it will be proport to the notice of a next of alongs quity suspected to the inflammablest hallows, and which raises from the principle. It is, that a styck, of lightning or the smallest electric spark, happening near the hallon, highly set five to the inflammable-stand and electry the mediates and the electricate—but several considerations seen to restore this approximation on great weight, though they do not entirely remove it, according to the present state of knowledge. First, this electricate new extendibly happened, though inflammables in blackon have been up in very season of the year, and at the very time when thunder was actually heard; secondly, in case of danger, the aeronauts may easily come down to the earth, or ascend above the clouds, viz. show the region of thunder-atorms; thirdly, the balloon, made of materials that are not conductors of electricity, is not likely to receive a stroke of lightning, especially as it stands is sulated: for it is a maxim pretty wall established by electricians, that the lightnian, is coming to the earth, does not strike any intermediate body, except that body can assist its passage; thus, a house that contains a great deal of metal, and is situated upon ground that is a good conductor of electricity, especially if near a river, is more likely to be struck by the lightning than a house which stands upon dry and hardly-conducting ground. This has been confirmed by many instances. It may be said that a stroke of lightning may strike the balloon in passing from one cloud to another; but the same reasons which show that the balloon is not likely to be affected in the former case are applicable to the latter: however, at present, it seems impossible to give a proper decisive answer relative to this point; and nothing but experience can show how far the aeronant may be in danger of the lightning. Lastly, it may be observed, in regard to this circumstance, that inflammable air by itself, viz. namixed with a certain quantity of common oir, will not burn, and consequently, even if a spark of electricity was to pass through the balloon, it would not set fire to the inflammable air, except a hole was to be made in the envalope; in that case the inflammable air coming out of the hole, would mix with the common air, and might easily be inflamed by electricity.

In the came of the preceding history I have ascardy mentioned a word relative to the numerous schemes that have been proposed for directing the accretation mealines. The projects of this sort have been numerous indeed, but hardly ever had the appearance of probability. Some imagined that an executatic machine gridt by means of a sink, like a vecal of a test, facing that all there is no wind with respect to an association another; for ligorous with the wind, and therefore is respectively in a orbit; in which near the saids cannot act, in the contract of the contract of

Beautiful closed! with fields as soft and fair, Sevinnaing to the pure quick still. Thy discose bathed in smallgift, while below Thy adabase feet the value moves about 1. Thy adabase feet the value moves about 1. As cool if course along the grain. Beautiful closed! I would I sever with thee In thy calm way of a land and sest 1. To reat on by murelling shirts, and look the Earth as on an open look; And the long wany that seem be thanks; 1. And hear her humaning cities, and thu some of the great occus breaking nome. Ap—I would nail upon thy sin-borns car. To blooming regions distant fat, To where the sun of Aukalonia shines that have been an experiment of the soft highest of bady's bright sky to smill suppose her raise is:

Bad I would woo the winds to let us rest. Over three long fettered and oppressed.—Batant.



CALUM SPECE PETERCS STULTITÉ. -- Har. Ode 1, III, 38.

## CHAPTER IV.

1785

THE CHARLO-MONTGOLFIÈRE -- THE DEATH OF FILÂTRE DE ROZIER, AND ITS EFFECT -- ASCENTS
OF INTEREST TILL 180).

To see and nights moves more than bear them told;
For them the eye interprets to the ear.
The beary metion that if doth behold;
When every part a part of was deals bear,
The last a part of owns deals bear,
The last a part of owns deals bear.
Doop anomis make leaser noise than shallow fords;
And sorrow clobe, being blown with winds of words.—Sitakspraam.

THE CHARLOW/NUMBERS — THE REATH OF PRINTER IN BOURDA AND R. MORRACH — READONN — THE LUTTER OF THE SCHOOL HE ARE "THE READON"—THE READON — THE PRINTER STATE AND THE READON — THE PRINTER STATE OF THE PRINTER OF THE PR

Triskurs GATALLO ends his history—Indelly for the remarks he makes—in January, 1785. Had he delayed till June, his last tale would have been a melancholy one; for on the 15th of that month the shout of joy, that had re-echoed over Europe during two years, was rolled back by a wail of dismay at the appalling accident that happened to MM. Pilâtre de Rozier and Rozniers.

Public opinion from that time stignatised as foolhardy, all further attempts to navigate the clouds; and this opinion has been strengthened by the number of inexperienced adventurers, who, for the sake of gain or popular applanse, have run needless risks.

Here are the accounts of eyewitnesses; and we may now calmly judge of the correctness of such an opinion:—

This first and believed of semants desired to corous his seconous by the passage of the Charmel, but trivial osciletate and contravy winds helycolls have the for some meants. Mean-thil Haudershall be considered from the position. The many tensite he was subjected to in case-equence of continued perspectation galled his possibility spirit, and on the 15th date has bettered of 1 rat, with black lamadate, under understoods electromateurs, his last the to confident better the contravely of the con

Thousands of people watched their flight with peculiar anxiety, for another step would have been gained in the improvement of the serostat, should the Charlo-Montgolfière succeed. The advocates of the Mont-

golfière had now had two years' controversy with those who thought the Charlière the best; and it was the sublition of Plistre de Rorier to combine the two in this hold attempt.

About thirty aimstee only had object show they had left the currit; the S.E. current that carried them are to see had changed to SW, that sign he rought them inhale; when a sy care from these bloomade of pertators, maybe more welf and subdes than any that over canacted from so large a multitude; for at the same instant all babell the modeline in finance; and after many wrift, wavelibe motion, it fell a shapeless mass upon the ground, or newling which the mafetumest exceptant were found dual. Nothing more remained for them left a fell and part of the size of the si

l'assante, plaignez leur sort, et priez Dieu pour le repos du lours âmes-

L'extine, la douleur, Et l'autilit, lour dei dévé Ce moument, en l'autilit Ce moument, en l'autilit 1766. Aviens autilit des principes au moble courage Le perceire dans les aireil 18 douvrit au puisse, Le pris an eleurin d'innocessité, gélère Le voir ne teatre d'eux que la némotée Mewirent de l'Euxtre un moble német les voir ne raite d'eux que la némotée Mewirent de Deuxtre un métue laient l'extre de l'euxtre que la némotée Mewirent de Deuxtre un métue laient l'autilité de l'euxtre de la némotée Mewirent de Deuxtre un métue laient l'autilité de l'euxtre la német la laient l'euxtre le laient le laient l'euxtre l'euxtre l'euxtre le laient l'euxtre l'euxtre l'euxtre l'euxtre le laient l'euxtre l

Ill-tidings fly rapidly; a bad impression was made; and it was in vain that the writer of the following able letter to the 'Journal de Paris,' endeavoured to combat this misconception:—

Et la grandeur, et le néant,

One cannot doubtless too much regret the death of an anniable young man, full of love to science and victim to his zeal and courage; but wherefore throw upon this invention all the blams of some false combinations or neglect in the construction (of the machine), or perhaps some unforesecu circumstances?

There has never been an invention useful to mankind that has not cost human blood; we need not look far or examples.

Will the immortal Franklin represels himself for having announced to mankind the identity of lightning

with electric fluid, because two physicians have been victims to this discovery?

How many thousands have died from emetics, or the crushing of stone, and must we on this account forbid

the remedy or the operation?

Let us remember the time when a balloon first rose from the Champ de Mars, and was lost in the clouds in

the milst of Paris, automabel at this physical predige, as if a miracle had interrupted the lows of nature. Imagination did not even dure to fasary a human length attacked to such a vehicle; and those who virtually suggest experiments with those under sentence of doubt appeared to propose associating diabelleal.

At this timal period, a young man, of an agreemble and taking fayers, and of a period and hating factor.

leved by all who knew him, having every reason to love life, volunteered to try the experiment which havily any one had yet the corrage to think of. Every one said he was a feed, but when he had descended from the chosts after erossing Paris, all were ready to lock upon him as a being of another world. Hardly had the noverly been repeated from or few times that the public which to despise it, and apply of it

as children's play, that required no courage.

The fearful death of Pillitre de Rozier has re-awakened original fears, and again it is said that experiments

should be abundoned after proving so fatal to the man who first made the attempt.

The public is again ready to condeten as a fool him whom they had just admired as the hero of the sciences.

Thus is the tide of public opinion carried between contempt and admiration.

There is consching surprising in these experiments, which are so alarming to the imagination; it is, that

more than a hundred lave been made without a single accident. From this one would conclude that the dangers are not so great, when these lave all been trials and experiments. Such is the bot of mankind, that the most happy revolutions, the most methol discoveries, cost sacrifices.

Navigation, again, costs mankind thousands of victims; and navigation is useful to man.

Acrostats, it is true, are uncertain, till a way has been discovered for directing there; and this is a problem

Acrostats, it is true, are intertain, till a way has been discovered for directing these; and this is a protocu-

yet to be solved. Who will dare say the problem is insoluble, or that its impossibility has already been decided?

I respect the authority of them of selects, and I know their value; det Seince out; contents and companies, knows frence; and Rein the industry of section 1.2 and void final is companies and companies. And content final is companies and content final final and content final frence; is chief in section with it is section to the industry to the content final final the content final f

Before the discovery of Montpolier, Science had announced the impossibility of nan ever rising in the six and it had reason, for it could only combine and compare known forces. Mentgolfer appears, and at Anancay creates here forces and man flust in the six; should it by at a time when this discovery has extended the limits of possibility to a proligious extent that any one should pressure to say that it is impossible to extend them yet further?

This discovery has accustomed us to predigies, and reason has a right to expect new ones; everything promises that the reign of Louis XVI. will yet add this glory to the glory of the first discovery.

Intrepid and persevering men exhaust combinations in their numerous experiments, and chance, so to speak, is searched in all ways.

Genius, at the same time, will watch nature in all directions; and a single observation or a single idea may perhaps be worth a thousand experiments.

The following is the Eloge pronounced at the Academy of Sciences:-

THE ELOGE ON PILÂTRE DE ROZIER, BY THE MARQUIS DE MAISONFORT,

A porea must posses well-known beleast, and an established reputation, to venture to speak in paise of a num howe cost interpolity and active knowledge interest all generous hearts. I do not estimate my own powers, but only likes to the dictates of my heart. I conceive, that without being clopseut, we may dare all things when warmly affected.

Hereafter, on seeing his name consecrated by glovy, I will say, if his last expressions of affection were bostowed on no. I on the first to strew some flowers on his grave.

He was born March, 1757; the city of Meta gave him birth, but to Paris be dedicated his talents.

Almost unknown in his own country (which he left early in life), the city where he was born knew him only by these rays of glory which he spread over it; and although his fellow-citizens have a right to be proud of his birth, it remains only for us to hausent his death.

I shall not touch upon the family of Pilatre do Rozier. Let it suffice us to know that he was born of virtuous and honest parents. False pride is always founded in medicarity.

The increed, the artist, and the pot are the children of their own creation, and the eminent mas belong to every dense of distince. The great independence of poverty is, that it deprives or of a spoura and integrational culturation. A rich man, without therein, is the more likewish, as to be he in his prover all the neural obtaining them. Then, a man without formum, the Fillet or defineing, the see much the many right to our section. Because he has vanapshed many obtained to merit it, lie was but a surve buy when he was employed in the military polapit; it is easily of anxiety, belonseed, without fixing his to it. An attraction, which he could not resist, tell hus to physics and cleaning, and he soon gave binned by (t I may so express myself), to that happy endusions which thereof has the contribution within denseting general two the before the cycle of the fill of the contributions which thereof has the contribution within denseting general two the before the cycle is the fill.

At the age of seventeen, without support, without assured resources, he canno to this oupital, albured by a desire of instruction. He thought, with rosson, that Paris was the centre of all learning, and seeking out of his misfortunes new exercises, he determined to attempt all things in order to extend his knowledge.

The laboratories of two able chemists of that city were successively the ports where his youth found shelter during his first storms of life. Running always with equal ardsor to state his set all difficulties disappeared before him, and his daily employments could not retard either his labours or his progress. He found in plasmacy the first elements of that electric twich his genius satell his genius watell his position satell his

If its theory had previously seduced him, what charm did he not find in wholly giving himself up to the experiments of physics and chemistry? He attended all the courses, heard all the lectures, read with a vidity all the books. Intelligent, tractable, and studiesa, be marrhed with the strikes of a giant in thin newly-discovered correr. Nature bad between dee Differ de Bosier will the gift that for more he natural philosopher and the childhoopher and the

. . . . . . . . . . . . . .

In 1780 the city of Rheina wanted an enlightened person, capable of all things within himself, and of giving a public course of interesting and instructive chemistry. M. Sage was respected to name a professor; he chose one from among his own pupils, and Ellistre files to give letterure at an ange that five begin to receive them with advantage. That sail which first brought him to Paris soon carried him back again. Insutiable of knowledge, Pillitor, tried with beaching, insteaded to return to his own studies.

Commerce, for a time, caught his attention; but, compelled by a passion stronger than interest, he yielded, and returned to physics and obemistry.

Buye then, for the first time, for full interest photo-at once under the type of a Prince (Monisor, the Kingle bettlers), predicted for a seizure has location, class a friend to the state is cultivatel, he non metrod his regard and his favorus. To this invariable good furture he had that of writing a governe and smaller Princes, an englishend plojp of includes, and well knowing beet to profit by them have field and he to wheth them is notice. It has been been a second or the contract of the contract of the first and the first of the first and the contract of the first and the first of the f

What detardes must be concaded? What pattines must be oppose to the intrigence of makele? Then it was that be frequently existence, with that swretcome that always characterical bins, "The world is jet in the earl; but it begins always by opposing the good we would be it." Thus answering, by successes, to dealthe,—by the victors of things, to be instilligt of works, be succeeded. However, approach the projects, it humsums was fermed, and we now now natural history, chemistry, nantomy, and mathematics united and ranged under the name of the Muses.

It was at this time, gentlemen, that for the bosons of human nature, one man dared to resolve the problem of all ages. By the laws of gravity, every beavy body appeared to laws a direct tendency to the earth; but Mansiers de Managhier caudated and compelled the same laws to problem a contrary effect, and in the odd he below the claim of gravity. Thus truth came in aid to fable, and that which the inagination of ports invented, the genine of one man related.

A press must have coverage, grathenes, to combat and to attempt that which prejudices had declared to be impossible! What thoreas are plausical into paths of the learned by that some public bety attempt to instruct an engighter! Men, extreme in all things, are always lavish of praise or censure, and we have frequently seen them here grains combating with undefectivity.

In the neath of July, 1743, Nonieur & Nonquiller, already amessence to Paris by his fane, arrived there to extract the discover,  $T_{\rm c}$  Agle low as bested to the year of the asolating capila, and the field of Man became, for accordant to first field of training. The it was, that delivering hisself to that enthulsass which imagine segment things to sold formed to preview an appropriate them, Willying the size during the value with the proposal of the extraction of the disk that which no promo his ever ventured to forwer. The few of a man in the middle region of the sit, tranting his existence to feelle and weak relations, from all least; it has done reminded modules.

He action the place, which was for a lang time through humanity refraced him, and he requested that, as a force, which a location this gravable and obsciliate on a not of resulted panishment. This so, that the obsciliate of a give place could write he is that attention which attendes us to this life. It is to the public good that mach produce lacker glant above on early as above the errors and consume propinties. And, if he have associates as expected above on the property of the error and on the propinties. The constitution of the error was the entire through the error when the error was the error was the error when the error was the error was the error when the error was the error was

After many successful essays, Monsicur de Montgolfier consented to the repeated wishes of Pillitre de Rozier, and the empire of air became the patrimony of man.

There existed two methods, both perhaps equally dangerous, but attaining one and the same coef, though the contrary processes. A choice must be much and the inventor secured to give a decided preference to fire; here simple, more ready, more saving, this method amounced a more real utility, and advantages within every one's power.

From this time excensive was divided into two parties. M. Clarkes unstained with success the method he adapted, and price was the most evidenced arists behaving between the Air Bullean and the Mangelfiers. Always happy when a noise constaints in the only estimate that divides two rival! Happy when they have soo to at dow when one constaints for great and to mark their terms; especially to have the constantable prices of despiting every, of braving the psycalion of the momentum parties of despiting every, of braving the psycalion of the momentum of a slopting posterity only for judge, alone competent to presents in intervalsible devices.

The 21st of November, six months after the discovery made by Monsieur do Montgolfier, two adventurous mortals abandoned themselves to all the risks of an element till then niknown. Filter the Review and Monsieur the Marquid A Palada, participated a triumph, so much the more flattering.

Pillatre de Rezier and Moneleux the Marquis d'Arlandes participated a triumph, so much the more flattering, as it was without example.

To pass from France into England, through the region of the air, required new achievity. This idea is hinted to Filster de Rosier; he adopts it, and we soon see him on the coast waiting for the decrees of fate, and one of the three enly winds that could be formulate to him.

Blanchard! the happy Blanchard arrives at Dover, forming the same design on the opposite coast; fortune smiles on him, and the wind, more favourable, brings him triumplantly into his native country.

Incapable of feeling the sting of eavy, as just as generous, Piltre waits for him at Boulegan, crowes him with this own band, and goes with him to Puris without Serving to increase his trimpaly. Not imagining that he himself had done anything, he sees the success of another, and wishes to excel him. Encouraged by the most powerful motives, he sets out; but not without a most painful pressure.

I will not tell you that, during six months, be passed his time in the most frightful wavertainty! The days in getting roudy his machine—the nights, in coording the winds! Thrice he filled it; three times he was asated in the gallery, where I have seen him lying down broken-hearted; and three times the inconstant winds rejected his vows and destroyed his hop-s!

To draw greater advantages out of the system of sercetation, Filters had received to unite them;—such was big gains and character. I will not defined what he is second of either as to realize nor improduces, now loss in discovating a few. which could to be enabled in feeling. Let ut make it is prome he settled to defined the case of a rely siftening and deplerable milectrons. Let us rather cell to mind he let measure, for they will sever be demanding their inconstancy. In a wint in probe that is on the many the contract of the contract

I heard him say, showing me England, "My fortune, my glery, and my life are all on that side!"

that death was the sleep that awaited him.

It is with the most hourful random that I read, guidance, the moment when his pureous friendship and any like? He deeped one his same, and, frying to also any constancy, he stronged to frighten on with while—his not a remark constant of  $\kappa$  me, while he dured it himself. "No," may be to mo, "I his not a certain while—his host a sure apprintant" 1 "globed" for true it fast elementates with assumina than any analysis of the sure apprintant of "globed" for true it fast elementates with assumina than any phasic abose still keep up friends to the earth. They coape not "They fin spaceable" through the majority N yet policies them, and I breach with difficulty. All up somes are empedded; I nost suffermine, still eavy them: Alredy thirty minutes are etopol in this vident agilation——I hear divides all cound may, however extreme are; it that alredy label dol by layers! I capil modes one-videne and brings book the machine to the earth. I see it—but in an instant it disappears from my sight—it is over—no more hope remains for me!

(A few minutes after their ascension, the translator of this Euloginus spoke to the Marquis, who seemed much afflicted, and answered with his handkerchief to his eyes. As now as the Marquis perceived the accident, be mounted his loves and was the first from Rendezen to winces the cred fator of his belowed friend.)

It has nigreed my seal! Since there are degrees of grid which we may feel, but can never express.

No radiant pearl which greated fortune wears, No gen that, swiskling, hangs from beauty's ears, Not the bright stars which night's blue arch adoro, Nor rising suns that glid the versal mere, Shine with such laster as the tear that thenks for other? we down virtuely manly clocks.—Dawrie.

I conclude saying,—Would you prolong his glory? would you honour his ashee? Then encourage and give splendour to a Museum which was of his creating.

May the Belles Lettres which are there united add, if it be possible, now further to it; and that from this exchanting fusion may there spring up an establishment worthy to bear the nance of "Temple of the Musec," " Calmby reviewing the melaneholy incident that called forth these eloquent expressions of

sorrow, we may now, perhaps, woader that such a dangerous essay could ever have been made even by such an adverturous experimenter; but, far from concluding that all future attempts should be abandoned, we ought with greater energy to carry out such trials as have been found to be safe, and have a reasonable probability of success.

On the 18th of June, 1786, the following remarkable experiment was made by Testu-Brissy. These are his own words:—

Having been engaged since the commonoment of accretation in discovering a method for making taffetas impermable, 1 succeeded, and made on accretata seventeen feet in disasteer, in which I feet the Gardens to Latenthourg in the presence of Count Nullenburg and a large concourse, at 4.51 n.m., with the ascensional power of five nomble.

Having sequired more lightness on account of the heat drying the net, which had been wet by the morning's rain, I demend by the and of up on on in the Phin of Bonteneery to obtain more ballost. Cravinsty mode people use from the unit from all parts and surround me. The proprieter of the field, supported by some vincyard keepers, whiled to make me pay for the damage done; and when I oblived, he becked my our and took my coat.

I bade farewell to such inteoptiality, and again descended at 6.45, n.r., near the Abbey of Boanment, following the river Oise. At 8 n.r., I put foot on ground, to get rid of my broken ones, and take in more ballast. Some sportanen informed me that I was helfway between Ecoson and Warriells. On leaving I rose above some electric clouds, to a beight of three bundred toises. The thermometer was "b below freezing point. The car was covered with kickes, and I had to three out the more and is that recumbared no.

Night coming on, I bowered, and found myself in the midst of clouds, which were sending forth virid flashes of rightning and load thursler, and perceived that choice at structed or repelled me according to the amount of the electricity. A flag which carried the arms of France in gold sparkful with light. According to my clovation, by means of an electric needth. I could discover whether the current was notified to the control was considered as the control was control was considered as the control was control wa

It remained more than three bones in this storm-cloud, and the only damage effected was the loss of gilt on the flag, which was perforated with holes by the force of matural electricity. I may here observe that the thunder did me less harm than the peasants of Mostmorrory.

A calm succeeded, and I remained stationary, making the most of my time by taking refreshment. Finding

\* A monument is intended to be erected upon the spot where they met with their discrete, and the following epitoph designed for the Review

Victime avoué de la rigueur da sort Le cheuin de l'houseur da conduit h is mort the ballast was running short, I descended, at 3.45 s.m. in the village of Cumprein, where I was well received by the Curf. Text-things adsh further, that in his flight of eleven hours be mude often experiments, some often the the Curf. Text-things adsh further, that in his flight of eleven hours be mude often experiments, some often the Curf. Text and the curf of the curf of

A few months hier Testu-Brissy accorded on horse-back, without either typing the horse to the car, or perceiving in the moble animal the least fear. This experiment was to prove whether his assertion was true with regard to large animals, that their blood, being apparently less fluid than man's, would yet flow from the nose at a much lower elevation; and this was found to be the case.

The 'Airopaida' (with illustrations) appeared in 1786, giving the accounts of experiments made at Chester, in September, 1785, by Thomas Baldwin, Eeq., A.M. The style, as may be imagined, now appears quaint; and, for anusement, I will note some peculiarities, which will assist us in forming an opinion of how much the manner of thinking has changed since that neriod.

He regrets, in his introduction, that the many aerial voyages preceding his should not have been recorded; and he now undertakes to explain to the "bulk of mankind, which are by far the greater number," what they had not yet experienced. He also writes his narrative for the "Generality, and not for the Curious and Philosophic only."

He rises from the Castle-yard at 1.40, with a levity of 20 lbs., liberated by Mr. Lunardi, ambds acclamations, mixed with tears of delight and apprehension, the misgivings of humanity, &c.

He compared the appearance of that city to a coloured map, its blueness contrasting with the rodness of the Dec, "The blue is owing to the stones called slates," then unknown in the south of England. The concave appearance of the earth, the beautiful tris surrounding the shadows on the clouds, next attract his attention, but their description I will leave to another.

He takes out his note-book and peneil, "but a tear of pure delight flashes in his eye! of pure, exquisite delight and rapture," &c. . . . The imagination was more than gratified, it was overwhelmed.

The report of a cannon awakes him from this reverie, and informs him that he is becoming invisible to those on earth. Looking at his watch, he finds it 2.10½ r.m. By an after comparison, he found that it took thirty seconds to reach him; and, from this, he calculates the height as 64 miles. A short two minutes later reaches his car, and informs him that he is no longer in sight.

Observing the Webb coast be commences to descend, and perceives that the under current is from the sex. On entering it the gas courtnet; be descends rapidly, and swiftly writes, "No more remarks, mind ship." By throwing out ballast, he touches the ground so lightly that his watch and thermometer, lying on the sext, are not displaced. He finds the loar to lo 2.3, and the distance from Glenetr twelve miles.

Two minutes later he again rises, 31 lbs. lighter, and the sea-breeze at starting carries him cover Ashton Hall. He compares his rapidity to that of a skyrocket, and reaches a greater altitude than on his previous ascent; and thus does he give vent to his feelings:

"For a while detached, far detached from carth, and all terrestrial thoughts; rapt in the

mild aure of the othered regions; suspended in the centre of a vast and almost endless concave; come as a mere visitor from another planet; surrounded with the stupendous works of nature, yet above them: the glorious sun except, which enlivened all, and shone with pure colestial lustre. A peaceful scruiity of mind succeeded; an enviable Exposs, an idea of which it is not in the power of languages to convey or describe, "

He remarks as curious that the thermometer is at 60°, and warmer than the sea-breeze, the abo hreathes freely, nor did the pulse quicken. Bladders filled with air, attached to the car, in one of a descent in the sea, crackle and look like bursting. He tries experiments with the valve, and alternately rises and falls. The country people said that he appeared to be "ouivering and warning in the air."

He suggests balloon geography, in which maps should be drawn with a camera-obscura, aided by a micrometer applied to the underside of the transparent glass; and notices the predilection balloons have for becoming stationary, even in a strong gale, over channels and rivers.

At 3.4 le could not recognise the country. He sees through the clouds what appears two red handlercinés, surrounded by a green border. It excites is surrouisty; he discould into the smaller, with a uniformly rebarded motion, and alights as "the down of a thistle" at 3.54 r.M. The country people como vasling to him anble-deep, and inform him he is in Ritton-moss, twenty-five miles from Chester; the other, of handlecrolied appearance, being the famous Chat-moss. Till sunset he anused the country people with rides in the balloon, conducted by a rope, along the turnylike. From his own observation he makes the following remark:—"It is from frequent experiment only that diminution of objects presuppose distance."

The Pindaric Lunardi, whom I have already quoted, in a second series of letters to his guardian, describes, with all the liveliness of youth, and the warmth of an Italian imagination, his aerial voyages in Scotland, in the mouth of October of this year.

His first flight was on the 5th of October, from Heroir's Gardens, Edinburgh. Rising at 3.15 r.w., ho system "The city of Glasgeov I could plainly distinguish, also the town of Paialey, and both slores of the Forth; but my intention was now diverted by finding myself immediately over the Firth of Forth, at an altitude of 2000 fort, I descended within 500 feet of the water, to inform the beats that it was needless to follow me; then, rising to the clouds, found the upper current was in an opposite direction. The northern cases, treading away in the distance, was now one of the most remarkable objects in view. At 4.20 r.w. I descended at Cere, after a voyage of forty-wis miles, kirty-wish steing over water, and was conveyed in trimuph to the town of Cupar," where he received an address from the dub of gentlemen Golfers.

The Rev. J. Arnot, of Cores, thus describes the descent he had witnessed —" Yesterday afternoon, the sky being clear, and a breeze from S.S.W., whilst overlooking the stacking of some corn, a boy who was standing by mo took notice of what he thought was a lawk.

Meditation here
 May think down hours to moments. Here the heart May give a useful lesson to the band.
 And learning wiser grow authout his books.—Covern.

I looked, and perceived a globe nearly six inches in diameter. I knew Mr. Lunardi was to ascend from Enithmethy, so I immediately gave information that this was bis balloon. It was them 2.55; at 4.10 the balloon descended below the clouds, sad, as it drew near the earth, appeared to sail along with a kind of availing nanders and analysty. At 4.22 pex, anchor was east, and we ran up to give assistance, Mr. L. told me the baremeter had stood at 18<sup>4</sup>½, the theremoneter below freeding-coint.

On his return to Edinburgh he was made a burgess and guild-brother of the city; also a member of a merry society called "Knights Companions of the Beggar's Benison." The following is the diploma:—

## " James Luisdaine, Proses.

" By the supercuinently beneficent and superlatively benevolent Sir James Lamsdaine of Innergellic, Sovereign of the most ancient and most paissant Order of the Beggar's Benion and Merryland, in the thirteenth year of his gravitinship, and in that of the Order 578-8.

\* Having nothing more inservly at heart than the happiness and prosperity of our belowed subjects the inhibitants of our released scriptions of Arrysholo, and the encouraging of trades manufactures, and agriculture in that still-plot colony; and whereas we are fully satisfied that Vincert Lannali, analysis and consequently a stress of the still and the stress of the still and the stress of the still and the still and the stress of the still are almost the companion at we do be released and the replace and Marryshold, but he mans, soils, not that of Set Vincert Lannali, do to be end analysed by the same, soils, not that of Set Vincert Lannali, do to be end analysed point in all time coming, with our full power and privileges of largers, ergoes and regrees, from and to and to and from all the stress of the stress of

"Done at the Pegggr's Benison Chambers of Anstruther, upon this tenth day of the month, known to the vulgar by the name of October.
"Witness, I the Recorder,

" P. Plenderleith, D.R."

# LUNARDI'S SECOND SERIES OF LETTERS.

#### LETTER

My nexocent Ferryn, Kelso, October 20, 1785.

I did not promose to write again tifl I had ascended from Kelso; but time tempts me with a few leisure

I did not propose to write squan util i not ascended from Actor; but time tempes me with a tew tessure moments, and I am thoroughly convinced that I cannot employ them better than in corresponding with my worthy guardian.

I have now been four days here, three of which I have passed in preparing for my serial voyage; and everything being in readiness last night, I went this morning, in high spirits, to amuse myself at the race-ground.

The weather was fine, and the concourse of people very considerable; the box was crowded with the most respectable consumy; but the number of ladies was less than I expected.

The races afforded me much entertainment; for though but few horses entered, they were very swift, and the riders excellent.

My stretcia, however, was more strongly fixed upon a much between the Duke of Hamilton and Bobert Billed, Eng., both of stoom for their come hores. Never did I belock at more sharinkes proceed: My sizes suffice back through the wide channel of history, reverred to the Greein States in the mortilizat of their glacy. Methomph I are two horses containing for the prior in the Optiquic Games. Forming from the better the yel armost highly cover the pila, halled by an universal board of applaces. Equally rapid the two convers moved as if both were animated and directly by the same spirit, Expectation for the tower of while in allower, but some them the pages to rive at stort, genetic as the annule from a well-regulated hire of love, they seemed but to fixet on the wint: by dargress the insins increased; and now the short of adminstration and concargement, the board relationship of loop, the exhanation of joy, chancer of mopone rent the very sit! A few mounts were likely to determine the vicety; the black and his antagenial executed their stanct-of-time, their bases flow, and save apparent to note the earth. Every two sas fixed upon them, and every hour panels as agitted in fewar of one or the other of these ages competitors. The gad was in view; they sharted forward with the velocity rightforming, and but revoked it at the same instant, without the hour promptible difference! The new was still andecided; the paint of gleby was not represent the contract of the paint of the same applaces, the same cancions to be place; every new mannions to see the termination of a center to robby pursued; once more they tended the gad at Massa, and nor oral difference the the rost of one of the maintain.

I cannot express the pleasure I took in this sight; more especially as it was to me quite new and surprising; as you know, in fully, people of rank never show these abserts to the public in such a complexions manner. Presidently speaking, I own I highly approve this custom, because it must, in a short time, cause the gentlemen of distinction to creed in homeomorphic.

The new here are supported by subscription. The genthene bring balles along with them; they all disc regelers; after which the latter retries to frow, and are the first to enter the ball-room, whither they are soon followed by the gradients. It is not uncommon, in this small country-town, to find in the evening a most brilliant and numerous assembly.

The happiness I here only does not proceed merely from the civilities and attentions hourly shown me, but from the many operaturities of observing manners and customs calculated to proceed the peace and welfars, and heighten the pleasures of a social and descring people. There is but one reflection to damp my joys.—you are not here to share them with the too fortunate

VINCENT LUNARM.

P.S.—My next shall, I hope, give you the particulars of my serial journey, of which you need be under no apprehension, as this is an inland town.

### LETTER II.

Edinburgh.

On my return to Kola, I instantly wrole down the particulars of my woyage, intending to transmit them to you without loss of time; I was, however, prevented by the impatience of the people there, who handed them from one to another, till at last they got into the public newspaper. That I may gratify my wishes, therefore, in making known to you the circumstances of my journey as specifly as possible, I shall, without ceremony, insert what appeared in the Koto paper, which you may rectly as every way anthetitie—

MY DEAR GUARDIAN.

" Krl.so .- Last Friday being the day appointed for Mr. Lunardi to ascend from the churchyard here, about eleven o'clock forencon two cannon were fired, to give notice that he had begun to fill the balloon, the process of which succeeded to admiration. At half-past twelve two guns were fired as a signal that the balloon could support itself. At one o'clock other two guns were fired, as a signal for the attendance of the ladies and gentlemen, as his departure was approaching. A quarter before two o'clock, the balloon being sufficiently inflated, he attached the car to it, and put therein a basket full of provision, four bags of dry sand for ballast, a grapple, several small ropes, a barometer, thermometer, compass, quadrant, &c. He then got into the car binaself, and ordered the balloon to by carried into the middle of the churchyard; and giving the signal for two guns to be fired, he rose perpendicularly from thence, at two o'clock precisely, in a grand and most majestic manner. Immediately on the rising of the balloon. Mr. Lunardi stord up in the car. took off his hat, and howed to the spectators. At a greater height he threw ont his flag, which is forty-eight square f-ct, and was fastoned to the car by a cord of one hundred and fifty feet in length. About ten minutes past two he entered a thin cloud, which pretty much obscured the balloon; but he soon came out of it. At twenty-one minutes past two he entered another cloud, in which we lost sight of him about four minutes, but the flag was still discernible below the cloud. When he again became visible, he was seen going below all the clouds horizontally to the cast. About fifty minutes past two he was lost to the naked eye. though several with glasses say they saw him longer

"It those who were not present, it is impossible to give any idea at the boasty and grandeur of the spotsace, with could only be exceeded by the cool and interpol innance in which the adventures consistent himself; and indeed be appeared more at his case than the greater part of his spectators. The multitude assembled was very great, but had the day of his assembne been generally known in the country, we doubt much iff the clurchyard, large as it is, could have contained all that would have been assembled on the occasion. So anxious were all ranks

to be present, that, although it was marked-sky, most of the slope were shut by one c'eleck.

"The balloon, which contained about five bounded yould of talkin, silk was shaped like a peur, thirty-three
feet high, and twenty-three in diameter, with a netting over it, and striped with different relears. The our had a
bottom of this board, with a small metting round it, rememented at the now with principal forming of the content of the cont

Mr. Lunardi was dressed in scarlet.
- "Mr. Lunardi has favoured us with the following particulars of his voyage, which is the second that has been reformed in Southaid:—

" As soon as he got up, be could plainly perceive the sea, and that his course was towards it. Twenty minutes after his ascending with his balloon he got into a cloud, and lost sight of the earth; he might have gone through it to enjoy the higher region, where there is always a fine clear sky, but thought proper to keep himself down, to give pleasure to the spectators. At twenty-five minutes past two he was only four thousand feet above the surface of the earth; he then, observing the sea to be about ten miles from him, began to ascend higher, and when at the height of six thousand feet, the west wind above was stronger than below. He went through the clead, and for two minates observed the clearness of the sky above, and the thickness of the clouds beneath; his intention was to go in search of another current of air, but having no signals above for it, and being so near the sea, he thought proper to come in sight of the earth again, which he effected in three minutes. At three o'clock precisely he was no higher than three thousand feet from the surface of the earth, and went horizontally at that height for five minutes; he then began to descend, as he thought the sea to be no more than a mile from him. At twenty minutes after three be unchored at Doddington Moor, about four miles north-east of Wooler, where several country asonle were collected. but they were afraid to approach him. He called to them, and after repeated entreaties they at length came up to him. Mr. Lunardi then inquired how far he was from the sea, and they told him four miles. Here Mr. Strother Anerum, who had followed him on horse-back for two miles, came up and shook hands with him. He desired six of the country people to draw him with the rones to Berwick, but after having carried him two miles the wind blowing fresher, and in an opposite direction, the men were not able to hold the balloon. He came down in a field at Barensoor, where he captied the balloon, with the assistance of the people who were coming from every quarter. When Mr. Lanardi alighted he had sixty pounds of ballast remaining, which made him regret much his not being able to proceed farther on account of the sea being so near,

"Amongst the people who mas to congravates his ade descent, Mr. Lumail took mach notice of the two Mhas Illads of Theorems, Mis Wilkier of Londington, and Mis or of Nevenutle. He gave much prince but Mis Illads of Theorems, Mis Wilkier of Londington, and Mis or for Nevenutle. He gave much prince but Mr. Richard Thompson of Barmone, who, after giving Mr. Lumail every solutions in his power, ordered the Indian to the carried to his decas, and pilled princised on Mr. Lumail assequently of his lower bouns. Mr. Lumail question the sight at Mr. Thompson's house, where he was entertained in the most hospitable names, and the Perchfaria set off for Kios, when he arrived on Sturdley at no ordical arthrous. He was not upon the highly by a great number of the knowspeeple, and rads in trimspit to the Cross Keys Ina, with his fig. disulpoyle on the top of the chains, the balle rigingly arms soulting and the propole desaming to whom his his fig. disulpoyle on the rep of the chains, the

On Sturdy he dised with Sir James Dougho, and supped with the gentlemen of the Cale-lonian Hunt. On Smada, be was entertained by Sir James Pringel, at Stitchill; on Monday by Lord Hunn, at Hirsel; and Menday evening by our ascient Ludge of Processoons, of which he was admitted a member. On Tucoday, about now, he set off for Zhilburgh.

"Mr. Louardi's course was due east (till the end, when be was carried a little to the south), continued an hour and twenty minutes, travelled twenty-five miles; his highest elevation, when above all the clocks, was seven thousand seven hundred feet."

About two hours ago I reached Edinburgh, in god health, and coals not permit the post to depart without sequanting power with the whole transaction. In any heliging I found several lateries, in particular two from most respectable people in Glagow, favriting me faither; I must therefore pay a visit to that city as soon as possible; and I beye, in a few days, to write you from theore, and assure you more more how much I am and evershall be, your obliged and greatful.

V. Legants,

V. LUNARUI.

My DEALEST FRIEND.

Glasgow.

I am alresdy as well known in this city as if I had resided in it some months. About seven colocks in the venting I arrived here, and was immediately favoured with the visits of several grattlems who had been witnesses to my ascent from Minkungh. As I possed through the stretch in the meeting, a thousand cyes were fixed upon me; and if I remained in view for any considerable space, I had the pleasure of seeing the windows filled with eager behalders.

My fast visit was to the chief magnitust, who revived no with the greatest civility, and some a mighty heart, worth, and cultimoning muthaness. I belge at the Tentier Host, delpining to which is the nost elegant office-room libers seen in Europe. The city of Gluspow is in generated very next; the attract bond, welltered to the contract of the con

A few days after my arrival I become nequainted with one Mr. Ingram, who seems very much interested in my behalf, and by him I was introduced to Mr. Preche, a merchant of this place, uncernamonly popular few generating and openness of beart. He was fermerly Provent of the city, and thought another is now invested with that district is selfit retains the title of Proverty Provent.

The University of Glasgow is one of the most complete that can be imagined, well calculated for diffusing overy branch of science, and they have an excellent Observatory, charmingly situated in their extensive gurden.

An this garden seemed to me the most eligible place for my accent, I applied to the Professors for it; but they in a pollin nament ediction graviting my request, on account of many young trees which neight be nignated by exceeding the concurrent of people. I was therefore advice to open a subscription for definying the expense; which accordingly was done three days nince, but it gas on abouty.

There had many ranables through the city, but one find no place that will asswer my purpose. I do not like for run the hanced of lowing a removine's may 1, but, on the other hand, I am treated with so much condibility and civility, that I know not how to readen, no ast cone to clear my best and head from my disgraceful reflections; but I am fully best to accusative you in my next with the final determination of your

VINCENT LUNARDI.

LETTER IV.

My hosoure Priese, Glagow, Novamber 22, 1785.

Everything is settled and ready for my excursion; and, if the weather proves favourable, I shall go up to-morrow.

The day after my last was written. I went to St. Anderw's Christyczak which indeed may be overloaded in every part, but the secures are stratability will fixed, of the wide massed throught it would be convenint for all these who had purchased thickes. I intensity applied to the majoritants, who vary radily allowed not the use of it; in cascaquence of which ladverhead that willnot be the maleriphical, Intensical certainty to ascerd on Welmoday, traving that the helies and gratheous of Glospor would not permit not to be a hear by my ascension. An indeed, I and around your content that will not be seen as I have been distincted that; if the money arising from the children's shall prove defeired, they will immediately make up what is wasting; and I know that in the cours of this dy tricket to the assent of fifty problem have been been been depended as

By the desire of many principal inhabitants, I have exhibited my balloon in the Old Church choir, where it the kind lefone; so that, one way or other, mosey cough will most prebably be collected.

I have also the pleasure to inferra you that in consequence of an application to Colond Perguson, Commander of the 27th Regional, accompanied with a card from the magistracy, I shall be attended by a good number of addience; and during the process of filling the balloon the band of the regiment will entertain the company with months under

By a person of all my betters you will find that my spirits have in general been raised and depressed shirty. Nothing however, has been able to conquer my resolution; and I have so often shown myself superior to Mofertone, that I think she is by this time tired of persecuting me; therefore I subscribe myself, as cool, collected, and happy as every.

Your sincere friend,

V. Luxard.

LETTER V. Glaugow, November 23, 1785.

Data Sin.

Secon has overpaid by expectational? I am returned to the cureous of the generalizing friends, shall make a second assessmin on Nhosdy mert. You will imagine that I ought now to be indicated prospitated, shall make a second assessmin on Nhosdy mert. You will imagine that I ought now to be indicated prospitated with the ski, and predesses all this gas for fright goes ansider; to play two in lawton to great an extra property of the p

Previous to the detail of my very mecossful expedition, I shall insert a paragraph from the newspaper, the publisher of which must be a person who understands something of Acrostation, as he describes my apparatus better than any other writer that has attempted the subject.

"AN AUTHENTIC ACCOUNT OF MR. LUNARDO'S ARBIAL EXCURDING FROM ST. ANDRIM'S CHURCHYARD, GLASGOW, ON WEISSINDAY, THE 23RD INSTANT. (Extracted from the 'Glasgow Advertiser,' November 24th, 1785.)

"On Wednesday last Mr. Lunardi fulfilled his promise in ascending in his aerial car from this city. He came to the place appointed at cloven o'clock forenoon, in company with the officers of the 27th Regiment, preceded by the musical band, and followed by all the soldiers under arms. After they had taken their stations at proper places. everything was got ready for beginning the operation about twelve. The balloon was suspended at the east end of St. Andrew's Church, by a rope stretched between the top of the church and the ground at some distance. Three very large casks with iron husps were sunk to some depth in the ground, for the purpose of containing the oil of vitriol and iron necessary for the operation. These casks were furnished with large tin tubes, which, passing through a large vessel of water to cool the vapour, united into one, round which the mouth of the balloon was tied. Upwards of a ton weight of iron shavings were divided among the casks, and five or six tons of water along with them. A large tub lined with lead in the nuder part, with a hole in the bottom, was used as a fannel. This hole was closely stopped up with a stick, until the quantity of oil of vitriol destined for each cask was put into it, when, by pulling out the stick, the whole quantity rushed in at once. There were sixteen large bottles of oil of vitriol used, in all containing apwards of 2000 pounds. On mixing such a quantity of heterogeneous substances together, a turnult, effervencence, and host were instantly generated to such a degree as cannot be conceived by those who have not been eyewitnesses of similar operations. The vapour instantly issued out with great velocity, and ascending in the balloon, began to swell it first at the top, so that it became quite round and full there, while the under part remained quite flaccid. By degrees the swelling proceeded downwards, and the not with which the balloon was covered began to embrace it closely. About half an hour after twelve it was inflated sufficiently to carry its own weight, so that the rope by which it was suspended became no longer necessary, and was therefore taken

We bored to watch the availors witning high. In the bright same of the walfed sky, for gase upon the clouds, whose coloural pride. Was scatter if thinly o're the weblin wide. And taiged with such watchy of shade, To the charm'd soul subliment thoughts contry'd. In these what forms meanantic ids' se trace, While Fancy ied us o'er the realma of space;

Now we espicid the Thumbrer in his cur, Leading the enhabitide Neraphin to war, Then standy towers described, sublinely high, In Gother grandeur flowming on the sky; Or may, wide stretching o'er the azure height A ridge of glaciers in namal white, Hugoly terrific.

away. The wind struck on side of it considerably, which rendering the opension of filling assertable difficult is was palled down by means of the net and coule affixed to it, as close to the ground as possible, which removed that difficulty. It was kept in this position till about ladf an hour after one; and though the small indicated some loss of inflatumable sity yet, considering the large scale on which the operation was combetted, we cannot help thinking that the chemical part was performed with great detectivity.

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"As the balloon now began to pull very strongly upwards, it was no longer confined, but gradually suffered to rise to its full length, when it appeared of a beautiful oval shape, but still somewhat flaceid in the under part. The oar being now appended, Mr. Lunardi took his place, dressed in his regimentals, amidst the anxious expectations of the spectators. At a quarter before two the balloon, now fleating with Mr. Lunardi in it, was conducted to some distance from the church, in order to give n more full view of his ascent. It was then let go, and began to rise somewhat slowly; but Mr. Lunardi seen quickened it by throwing out a sand-bag, and as its ascending power was not yet answerable to his wishes, he in a few minutes threw out another, and after that a third. Thus the balloon rose with great rapidity, to the admiration of every one who saw it, and being impelled by a brisk gale, flew also with immense velocity in a S.E. direction as it ascended; and during this ascent Mr. Lunardi gradually lowered his flag to a considerable distance from the balloon, which occasioned no little uncestiness among the spectators, many of whom imagined that the car was getting loose and falling away. In about a quarter of an honr our adventurous here was lest in a cloud, to the great concern of the spectators, and though a glimpse or two of the balloon were afterwards obtained, it was impossible to view it distinctly for any length of time. He was seen possing over Hamilton at two o'clock, so that he must have been flying at the rate of forty miles an hour. The magistrates, in testimony of their esteem for Mr. Lunardi, ordered the bells to be set a-ringing; and in about ten minutes after he was even passing over Lanark. In the course of his journey, it is said, he met with a southerly current, along with which he was carried for about twelve minutes, but afterwards returned into his former course.

"It is impossible to describe the astendiment and indirection which Mr. Lemedi's secret consisted in this place, Induct, the sight of the bellow, with Nr. Lemedi according dong with it, was supplied and beautiful layoud description. To this, induced, the gross-fulness and general air of his person, with his easy interpolling in the moment of nearch contributed and at little. The most impairs part of the secret, include, and yielded to these in the churchyool, being in a great measure lent by the near of the operation who old not purchase trickets. The concease of people was assuing. The Gross-the steps of the harves, and all places where benegit could be all others instint that he was in compact with the Devil, and ought to be locked upon as a man reproduced by the Angalyty.

"During the whole time that the balloon was filling, Isalife Brown attended, in the absence of the Lord Provent, and showed the greatest extention to Mt. Lonardi; and invited the principal persons, who were strates, to dise with him in the Toutine, among whom was the Earl of Londoun; and an Assembly was held in the versainz.

"While the hallow we filling, the cospany were entertained by the motival hand of the 27th Regiment, just now quartered heavy, who played a quite marks he awe stup. It is compared that there were upwards of the opportunities are while the property of the contraction of the contr

" Edinburgh, Fralay Morning, 11 o'clock.

"I have the honour to inform you, that at freely-two minutes after three clocks on Welcheshy evening, I toached the ground pan high hills, when, the wind being very frank, the calles gave way, and I bet at we can ache as and flag; the halton being then lighter, accorded to a considerable beight, and entirely but sight of the contract At fifty free minutes after three I fainty descended about two sales to the earth of Amon, or an two was the contract of Amon, and beading most with the accordance of the size of the siz

" Yesterday I was entertained by the gentlemen of Hawick, and the magistracy presented me with the freedom of the town.

"'This morning I reached Edinburgh, and to morrow, at twelve o'clock at noon, I hope I shall have the honour to return you, ried soor, my sincere thanks, as I do with my pen, for all your kindness. I have the honour to be, &c.,
"'Yysorr Luxanz'

" According to his promise in this letter, Mr. Lunardi arrived with his balloon in this city, about half an hour after twelve o'cleck on Saturday, and was entertained at dinner by the principal merchants, and yesterday by the officers of the 27th Recisent.

At the minute before two by my watch I protect from the ground, but could not jodge of the assembling power of the bulkon, by means of its waring with the virial, which was protectly high. Being therefore, apprehensive of its again descending to the ground, I there out two longs of small in the very charelynest, after which I assemble with great reducting, and sinned the very requestion as half illiant company when I had define all the multilates of spectation who were assembled all result, by lovering my fing glowt intry feet from the bottom of the galley. It was not exactly two colors, when I enterface a very third for semi-dark out which I pulled the walve in outlet to descend below it, but the ascending power was too great, so that I continued to rise for some time-loaner.

On my coming again in sight of Glanger, I found the compass had shifted \( \tilde{\chi}\_2 \), the wind being XW. I now possed through higher books and at free insulants after two was Helmiloon, bout two misel distant. The shiften had now less it is rising power, the medication of the sir having expelled a great quantity set of R. I could see Lanariv very well, but it was non intercepted by a small and thick book. I finding may find decording. I three with half a long of mod.] but that proving insufficient, if there down the whole, on which the follows noted motivations for about two unintees and the longs not no security at a good rate. I restrict a third double double overlaw of the interpretable at the double about three-quarters of a mile perputalizing, when I could patient see heaven nor earth, being in short involved in an occan of clouds, which about a mile show me I prevently were of different and boundfiel observe.

When involved in these clouds I dired, and having emptied one bottle of its contents by making a hole in its side, as I could not uncork it, I threw it down altogether, and heard it whistle as it descended for thirty-five acconds. The wind was now due south by the compass, and, being extremely fatigued and sleepy, having scarce rested three hours the preceding night, I lay down in the bottom of the gallery. That I might not, however, incur any danger by sleeping in this extraordinary situation. I fastened a small steelyard to a piece of rope, and this to the neck of the balloon, so that it was suspended about a feet distance from my face. The balloon was at this time keeping itself quite field by the rarefaction of air; and I was sure that when it began to descend it must become flaccid, and consequently longer, so that the steelyard would hit my face and awake me. Without the least apprehension, therefore, I fell asleep and enjoyed a comfortable map for about twenty minutes, when the hook of the steelvard got hold of my chin, and I got up at once. I could now see the earth quito plain, and a sementine river beneath me. I had no map, and the balloon was turning upon its axis, so that I could form no judgment of my situation; but turning upon my right I could perceive that the river below me was the Forth. It was then twelve minutes after three when I threw out half a bag of sand to keep me in a horizontal direction, and afterwards tried to descend on the other side of the river; but I saw with surprise that the balloon was again approaching to the river, when I dropped my pocket-book, and which appears to me has fallen about a naile to the north of the Forth. The balloon quickly crossed the river again, on which I threw away the remainder of the bag, but still the balloon rose but very little, and was involved in thick clouds on my coming to the S.E.

At twenty-free minutes after three the earth legan to appear, and I found I was over large hills, which I judged to be the Highlands. Being now demonfing very quick, I there above a tree of the Judkes, and me to considerable beight, but still in sight of the earth. At histry-sight minutes after three I was again devocating, and save the tops of the hills as less than 10 with a 1 pink of the twenty and the twenty and the less than 10 with a 1 minute of the twenty and the twenty and the twenty and the bottom their glassiches but ship for them the galaxy, and they and twenty all sight; and with the view the twenty and the state of the sight of the si

aw at a distance shorp feeling, but ontils not see a human being, and I was groutly surprised to hour my mane promotenced by any absorbed that singlish two bess three with his sheep; and I coally preserve no bowns, our was has in the neighborhood. I called shord several times through the bill, and after one-bird of a mineter or mineters essential could have the ords of my words returned as one of the stress periods, in which I asserted through the transpic. Talled his like "with a great twist. I benefit the word, i annual, hadde" project on the property of quite free from any interruption from cloud, I could not distinctly some people on here-lock. At last I confidenced to hands my docume between the like where the haldson might be abstracted from the high wind, on the confidence of the confid

It and the hely if also would go this to be ballow, who healty had promoned, "I will," when he get into the galaxy, and I went out of using the dep-place to bold the report, J far up now be lower, and in company with her bushash we followed her. After three good miles 'elified, I saw that the hallow was very much waved; and the shephend arms of the state of the help dep-was and it was with great difficulty and fatigue all of no together could rescred in engaging the hallow, which I committed to the shephend corr, and worst along with the gentlement and by A. At even of decide we surried at this boson as Stretche, where I was very well entertained. I had a conferrable sleep, and next morning their breakfact the gentlement in whose house I was to the in library, where I was never well entertained. I had a conferrable sleep, and next morning their breakfact the gentlement in whose house I was the provided out the state of the stat

Extract of a Letter from Gilbert Chisholm, Esq., Stretches, to a Friend in Glascow, Nevember 23rd.

"Yesterday afternoon, about half an hour after three, as I was returning with Mrs. Chisholm from a visit to Sir James Nasmyth of Posso, Burt., my servant called out to me to observe a paper kite of most surprising magnitude and height. Turning my eyes to the place where the boy pointed, I perceived a body flying among the clouds which sometimes intercepted it from my sight. As it came near the ground I perceived it assume an oblong oral shape, somewhat like a sugar mould; but as I could perceive no string to hold it nor any tail appended. I was convinced that it could be no kite, which indeed its extraordinary height had convinced me of before. As I knew that Mr. Lunardi was in the country, and intended a voyage from Glasgow this day, I began to suspect this must be his balloon, though I was yet unable to distinguish his car, and could scarce allow myself to think that he could be at such a distance from that city. As it still come nearer, however, I was at last convinced that it could be no other; and in about a quarter of an hour after I first saw him, he was got so near that I began to call out to him, 'Mr. Lunardi come down, come down!' This invitation I gave him the more carnestly, because if he had still cone on, he must have alighted in a very inconvenient place on account of the high wind. After repeated calls I had the good fortune to hear that he answered me through his speaking trumpet, though I could not distinctly hear what he said. At five minutes before four he alighted in a place very near the water of Ale, and so screened from the wind that the balloon stood quite upright, without inclining either to one side or another. Two shepherds who kept their sheep on the hill-side were so much astonished at the descent of the balloon with a human creature appended to it, that it was with difficulty I could persuade them that Mr. Lunardi was not some devil who would destroy thom. At last by my carnest persuasion they ran down the hill, and, with some signs of fear, came up to Mr. Lunardi. My horse was so much frightened that I could scarce come within a gunshot, but Mrs. Chisholm, who rule a more peaceable beast, was allowed to come much nearer. The shepherds at my desire convoyed the balloon, and Mr. Lunardi along with it, over the water which separated us, which they effected with the greatest case, the balloon yet rising from the ground with the slightest touch. After receiving our hearty congratulations, Mr. Lunardi asked Mrs. Chisholm if she would take his place in the serial car, to which she replied by jumping into it. Six willingly would have had the ballom set at liberty, but, as the visid was very high, Nr. Loundri judged this to be importery for any Nr. Chishani in considerably light, as hum there occured to a great height, and been conveyed to exercise it does not been considered to the post height and been conveyed to exercise it also there under the subscript when the wide is but their in this manner does seem carried for about the considerably on the weight just the interest of the wide of the considerable to the considerable to the subscript of the high, the latest of the considerable to the magnitude of the considerable to the conside

I shall not have consists to write to you again till I have taken my excend flight from this place, as I cannot appear that any accident well impose by an entreptic, the appearant normalings at 1 bits. I this evening I can the absorber to advertise my pecked-look, with two gainess reward to any person who may have found it; the neighbal value is no more than twelver shallings, and it contains nothing least a paper of calculations and two latexts, with any discretion, one of which is your lost, dated 26th October. My wishes are only to accretaln the place where it was found.

To morrow I shall wish Falsey, where some hountful manufactures are carried on. It is very astemishing that in France and Italy, where such a quantity of silk is produced, this hundred bessions should not be carried into the same degree of perfection as hard. On Smalay I propose to return, and Monday is the day fixed for my ascension; most after which, if no unlinely accident intervence, you shall again hear from Your affections to an I respectful

V. LUNARDI.

## LETTER VL

MY EVER ROSCURED PREEND,

Gindan

With additional placemar I once more take up my per to inferm you of another oried royage. Happiness is doubly dour when their communicated to a fixed. What immediate belonging has the Arr of Writing difficult. How many remarkable events has it perpetuated: How many nations has it tought to initiate the virtues of their anothers: Without his de-hourer friends, when separated by distant contrains, would be as adds to such about. By means of this mobile discovery, we communicate our immed thoughts to, and receive the kind sentiments of those we here and notest, while intervening command their friends were in white just best to man, which prefers coincide the blooming by wasting time in kills reductions, which I am convinced will not be half so interveding to your hour as a the following partitions for my has journey.

The sampleloss norming being arrived, everything was rouly by ton oldock for loginating the operation. Exactly at eleven I was honoured with the attendance of the 27th Beglmant, as on the former consists, no support the civil power in keeping the pusoe and posserving regularity; though, thanks to God, no rist or disturbance ever happened at any of my experiments, the popule being universally acquainted with my spright principles, and convinced from intention to fulfill urrousine in the most analle manner.

My two small easks, ordinking, one-half of the ingredients for filling the balloon were instantly act to work; but as at half an hour after eleven, there were but very few people assembled, I was advised by averant expectable friends not to go on with the other small a greater number of spectators should arrive. The operation therefore went to but slowly, but at trevier I ordered the large cask to be set to work; by which means the balloon was instanted by half a hour after can.

During this process I could not help persign very particular attention to the different currents of wish, which instead did alram we way much. On this council I was obliged to delectine the heliget with no a young cutterns of this place, only twelve years of age, but of undamend spirit, and when night have been a very agreedcompanion to no, had the washer been mill just the storges at this time was very disposor, so. I reged very soon experienced. For this same reason I was obliged with regret to refuse the request of Ospital Barns of the 22th Begindon, who had verwed times constraintly expressed to no his during of and rhopy, and at this time wished to have gone in my place. The answer I gave him at present, however, was, that "I would not, on this day, send up any friend of mine for all the gold in the world."

The vival in the lower regions had all this time been shifting almost every five minutes, and, in the space of an hour, had goes record alter-formed next the compare. The currents above were relicited by M. and S.W. and E. and S.W. To avoid any absorpt from the chards, I redword the balloon to be carried to the end of the milling, and there I followed the pollup vis in T. Devirdow which, and those the balloon consoriety; however, a first in the horizont shad precisions. I wanted, there shouly. I shelved several diffusion gardienes to let it gir, but you cannot conceive, up down of freed, the arthonical of everybody here is no, but correctly they wished to be next me, and offer me their services in the measure of accusion. I get sp, however, also tilly developed the contract of the contra

It was now more forty animates after one obleck, and my ascent was not very rapid, at I could see the people beliefe for its aimster. This fine I employed in secreting the play; to the belines better than it had been done below; we'ring the flag, subting the public. Soon after I best sight of tilespow. The wind below was SE, and I be all you're now. New, to that I was kep in view by everyority. An forty-vight matters after one, I would be a subtine to the country of the subtracts after one, I would be a contract of the country which the tiltudes to the could risk and to another view for the country which the tiltudes after one public to the country which there does it is an it was travely for time it is no even the country which the tiltude is the size of the view of the country which there is no see a subtract of the size of the country which there is no even the country which there is no even the country of the country which the country is the source twentile, in this matter is the country of the country of two new twentiles in this matter is the country of two new twentiles in this matter is the country of two new twentiles in examples. If was now quite first the twentile that country if two new twentiles in this matter is which the country in the country of the view of the vinde and below in the country of the vinde and which on a first which the country of the vinde and the vinde and

As fifty-two minutes after one circled, the balloon was predigionally inclined to one ride and the gallery abused corrections, do shall a sen excellengly advanced being Sillegion balls the upper how, where the attendanced we will be the symbol. These from the proper how the sent terminated, but will be the symbol. These from the support of the sent terminated will be supported by the sent terminated by the sen

The Rev. Mr. Lapsky, the minister of the privin in which I descended, was the first gradients who readed not and lie very prilipy and his servent to take error of the Indian, do, and expressed his jet in having such dentally not with an extracellary piece of good fermion in meeting no. While I was piece growthe his booms, excemplated by the which multilated for popule collected on that pats, we may at a distance a guartless consequence of the such as the suc

Mr. Lapskey agreeably annued me while at dinner with a conversation upon nerostatic experiments. He seems to be a very intelligent gentleman, and has written a letter to a friend of his in Glasgow, a copy of which I enclose for your inspection, and which will enable you to form some judgment of his sensibility.

At seven o'clock in the evening, a chaise being ready, I took leave of Sir Alexander, and was accompanied by Mr. Lapsley to Glasgow. I went immediately to the play, where I was received with great applause.

This day I was entertained at the Sameen's Head with a very splendid dinner by Provost French, Mr. Ingram, and several of the best citizens, where I was presented with the diploma, and made Knight of the Cape. Indeed, I am very much caressed through all Scotland; therefore, if I be attached to this nation, you cannot think it any wonder.

I reckon it a very fertunate circumstance that in this descent, as well as a former one, I should meet with a minister, young, sensible, and accomplished; such is Mr. Lapsley. I shall transcribe a letter from him to one of his friends: his attention to the various occurrences being more exact then what I could possibly pay, it has enabled him to observe, recollect, and mark down the most minute circumstances.

#### COPT OF A LETTER FROM THE REV. JAMES LAPSLEY TO A PRIEXD IN GLASGOW.

" Manase of Campsie, Dec. 6.

" Although you and my friends in Glasgow have had the advantage in seeing Mr. Lunardi ascend twice into the atmosphere, I will not suffer you now to boast too much of your good fortune, for he has done me the honour of paying me a visit in my own parish. I saw him descend from his car, and was pleased with the remorks of the villagers upon his descent. The people of Campsic were too hold to be afraid of him; and they are above disguising what their feelings lead them to express,

" Yesterday afternoon, whilst I was walking through my parish, visiting the sick, and rather inclined to be pensive from reflecting upon the scenes of distress to which I had been witness, my attention was suddenly arrested by a confused humming noise, which seemed all at once to spring out of the earth towards the south; but as my view from that quarter was intercepted by a clump of trees, I walked on, and for two minutes I had it not in my power to inquire from what cause it proceeded.

" An old woman at that moment joined me, hearing the noise at the same time, took some pains to convince me that it was the buzz of those spirits and alves who before Christman Eve hold their meetings in memoratored dales lamenting their lost power,

"You will easily believe that such a wayward fancy was not then agreeable to my present humour. I left her and hastened to a rising ground, when I now heard distinctly several people shouting aloud. 'Yonder he comen!' Turning round I beliefd the balloon sailing majestically almost over my lead. Mr. Lunardi was then standing in his car and waving his banner. His distance from the earth seemed to be about 400 yards. The people were coming from all quarters; their acclamations were every moment waxing louder and louder, and the farmers, in imitation of Mr. Chisholm, were shouting vehtmently, 'Lunardi, come down!' And I, along with the rest, invited bim to descend.

" I am rather inclined, however, to think that he did not hear me, owing to the whistling of the wind, it being very violent during the whole of his excursion. However, as he had resolved not to go far, we were indulged in our request; for exactly at two o'clock, he descended at Easter Mockroft, on the banks of the Glassart on the estate of Sir Archibald Edmonstone, of Dunreath, in the parish of Campsie, nino Euglish miles and a half N.N.E. of Glasgow.

"When I saw the balloon first, which was about two minutes and a half before two o'clock, it appeared to be very much agitated, turning round its axis, while it was floating through clouds of air, and the day being hazy, it resembled very much in appearance the full most, seen through a darkened glass labouring in an eclines. Sometimes it appeared of an ash, sometimes of a copper colour; sometimes even darker, owing to the different shades reflected from the Campsie Fells. About half a minute, however, before he alighted, the sun came out behind a cloud and shone directly upon the balloon: every colour became distinctly seen, the various stripes of the flag became vivid, his regimentals and the decorations of the car affording a varied and most beautiful spectacle, according to the play of the different rays of the sun, and as my view on the north was bounded by the Campsic Fells, whose tops were then covered with blue mist, the ballson appeared, as it were, to come out of the mist and descend in a sunbeam.

" As the balloon was perfectly anexpected by me, and as at the very first it appeared in all its grandeur, I confess, without hesitation, that the pleasure I had in seeing it sailing through the clouds, and descending in our sequestered vale, was a pleasure mixed with some degree of pain. I laboured, as it were, under the grandour of the object, and strove to compare it to something I had seen; but I failed. However, a young gentleman happening to come up to me at that moment, whose imagination was not so overpowered, asked me if I thought it did not resemble the description given by Milton :

Nigh at hand Hung high with diamonds flaming, and with gold: The diamonds flaming, and with gold: On a sunbeam, swift, as a shooting star In antumn thwarts the night.

I told the gentleman that this description was but a conceit in Milton; not ill-pleased, however, to find that we had got some likeness, though famiful, to compare it to.

"As he had descended as whiteh half a mile of where I stood, I immediately hastened to welcome Mr. Louncid, and log rish has ill the anothers he my govern. The whole country second to be shirt, remaining that have with the same high intention; and I prevised with pleasure that contently was a principle not confined alone to the breast man because the content of the second second of the second second second of the second secon

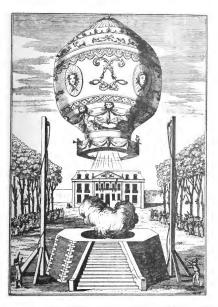
\* During any going from the rising ground where I flort save it to the wale where it alighted, I assortions has rigid at the one, by the greath wealth with interested, but mover object to the ballon; and it was sumposited some speak from the ground, between the darkness of the day and the Hownist of the mountain, under whose dashe was pixel from the ground, between the darkness of the day and the Hownist of the mountain, under whose dashe save in a spring morning cost of a thirt for,. Better larrived it assumed a new shape—that of a prace or inverted one. Mr. Lametil the standing in his case, when the new for term the ground, were people useding kins to get out and others beliefing the repe in order to prevent him from being dragged along by the strength of the ballons, which was been ring throw the present and the contractions of the contraction of the

"I two about six minutes after two when I got up. More than forty people were before me. A multitice own exactable from every quarter. The adopteral forces his face, the firmer bills plough, and the traveller his journey, so that in less than a quarter of an hour there were many humbrole going with noticeabount at the during adventures. Purelyody was pleased, and everylody whole to be sell desir al. Mr. Lamenti instally had consiste nous for auxiliation, our five recoverage them to give it. At half an hour after two the balloon was emptiod, and the neiting hadest, and other appearance packed up and all ready to market of the sell.

"Person from different parishes now winder duck to have the honour of his going to their particular village; however, as I had asked him to do not be the forcer of kitsing once refreshment at the Masso of Company parishibesers were not then to be gained; and in a seri of trimuph we began our journey, whose Sr Abrasader Stelling, of Glora, to of any pricipal before interior, come remaining pay velocating Nr. Lancal and initiating pixeling for Glora, which invitation we accepted of as being awarer than the Masso, and we set out for that gentleman's house in the following order:—

"A little pretty boy carrying the basner; next came Mr. Lunardi dressed in his regimentals, attended by the Barrying the state of the present and in the latest present the state of the present proper size the car, and then by six stout men bearing the hallons, exceed by a vant number of people of all decommissions. We had not, indeed, the ringing of bells, but we were believed by the hearty acchantions and repeated human of many handreds of the villagers expressing their jor at the memorrowed visit.

"In gaing to the Bonnaf's we had to cross over the bridge of Glassont, where short thirty young blooming looses had rauged themelves on such ide to have a gight of this complex alvertisors. All of them appeared well placed. There was one, lowever, not the least levely of the number, whose availability hell her to express kernelf more strongly that the next; 1-Hop receipt is all 1 with in Idea bloom with him." M. Lannadius twas to attentives the ist slip an apportantity to any act'ed thing to our fair country-woman; he parted her clear, whiteprings, X/N angel, and so do i. W. Wasterwet thing this young seven many be disposed to fragel, 1 will engage fit that will merefurge the thod has been considered that the contraction of the contraction of



I have a invegraphed at the Ordinates Survey Office Southwayton under the approximations of Equ'Illibration have RE led Six II have RE ERS & Director,

"We had now arrived within a few hundred prade of the hones of Glorat; we shoped at a little handle, pointing out most purpose to some now vision, when I proveried an all woman, whom Guillies would not premit he to run with the multirade, supprify boking at him. So first examined his flag, then she toweled his debtes and his boky, and sharing howhils in pack, packing her eyes, she and, if an sure there is an Glammary have; in all Six in; it is fair juty has should be a Tupint." She was inmodistely decked by an old gray banded man, who in the pride of his hort certained. The he place, fact we had Pagan, far is hat, the "he had were been and I collorage at their hord, I would trink his builth; and here's to ham." Then solderwise gluined to an, "Old Six, I were blarry hay can do the Highlandstane with; and below the page and page 1 and of the Pagan pant of printing the county to one ships utiling their dry lead; but the like of this I never saw. Dison ye think the world will soon be at an ord!"

"We arrived at Glerat at three clock, where we dined, and having drunk a few glasses of wine and coffee, a port-chain was get; and, as I was obliged to come to Glasgow that night upo busines, Hegged to accompany him. We set out from Glerat at half an hour after six, and arrived in Glasgow a little before eight. Mr. Lunaris nighted at the Toutine ansist the huzzas of a vast concourse of people, who had assembled anxions to express their joy at his arrival.

"Having promised his friends before he set out in his serial excursion that he would certainly, if possible, be at the play that night, he immediately, therefore, got drossed, went to the house about nine, and was again received by the acclarations of the young the gay, and the fair.

»P.S.—As I was obliged to leave the town without seeing you, I took the liberty of writing to you my observations on his descent, and the varied sentiments of curiosity and surprise which the spectators expressed. Perhaps it may contribute to your ansuement in an illa locur."

To-morrow morning, about four o'clock, I shall set out for Edinburgh, where I know they are all in expectation freeing a second excursion; and, if possible, I mean to ascend from Heriot's Garden on Monday, the 10th instant.

Put measure.

Asker! my honoured friend. Give my best love to my dear sisters, and believe me to be, with the most sineare affection,

Truly yours.

#### LETTER VII.

V. LUNARDI.

Edinbergh, December 11, 1783.

M ratanes Fairon.

At elevan of colock this formsom I reached Edinburgh, where, with atter letters, I dead two of your colock the color than 1 A colors and colock the and and the other than 1 A forenther. I am trity smalled of the many adhigations you have being large the colors of the physics would be the analysis of the colors of the

In your second letter I found enclosed one of introduction to your eld respectable friend; but I am extremely sorry to acquaint you that his death was announced in an Edinburgh paper of the 16th November.

I propose to ascend on Monday, the 19th instant, with two bellcoms, the common one and another of ten feet distorter, which is already made, under my direction, by the girls of the Merchan's Hougistal. It is to be 550 feet higher than that by which I am supported, in order to ascertain the different currents of air.

The same girls are also constructing another balloon, which, though without any valve, is so contrived as not to burst when the mrefaction of the air takes place, even though it should ascess with 100 lbs. of rising power. It

P

is composed of 100 yards of fine Persian silk, in stripes of pink, green, straw-colour, and white, and is designed as a model of a large one which I mean to construct for a long journey.

Till 1 return from my next flight, once more adies, and believe me to be

Sincerely, yours, V. Lunardi.

\*...

## LETTER VIII.

My reveres Guardian, Edinburgh, December 24, 1785.

My last letter acquainted you that I proposed ascending with two balloons—an experiment which, however interesting, I had not the good fortune to try.

The morning was tolerably favorable, but as the day advanced it because thick and fogg, stateshed with small min. Soulded tent hard bette decrementations of could not be within fee more than two or three minuses, and that it must be very inconvenient for the ladies to remain in an underbrind place like that from which I was to assent, after mass deliberation, I reserving to delay the experience to some more forwards doy. At this time of obtained a practice from his Europhicany General Market for the scale for the could be two obtact in the contract of the scale of the contract of the scale of the scale of the contract of the contr

In the shermon I attempted to fill the small believes with a new apparatus of my own investion, which me creded bypoid explained. All this time my largo machine was begin infinited with attemptive als at the bigidant (100s, where a wast concerned propies accessibled, and own greatlesses, friends to tay understaking, stopped to learn the opinions of the pools in general respectively my constant. It asked pays to indees up out all the lation approach it, and only a very few gardness are represed their similarity, and the mask of disapproachesis, trifling as greatly asked profit in the contraction of the contraction

On Tambry, about even which, I area, and provincing it to be a few menting, without noticing the direction of the wind, I soleshed apersands to array everginate successpre for apersands to the reprovincing accounts per supersiments. If therefor dartees, and were a note to the foregree of the Caulto, begging to be forward with the attendance of the military and the firing of a game, and but how promosile. In her Highward ness enough question produced at receiving and a case, that which was too much from the rest, and director very adolgance second question produced at receiving and a case, the which was too much from the rest, and director very adolgance between the contraction of the cont

any ascension.

A little after cleven évlock I began to fiil the balloon with half the appeartus, and in ten minutes it could support itself, lost at this time there was not much company assembled. They and the gan was accordy lossed, and as the wind eithly continued swarfer, people of cases could as funging that I mass to western. I now sent to trained Morley, respecting the force that another gan might be first: this like Euclideary modify greated of the could be a fine of the could be a fine with, the first given labels at little like I likelik I

During the process I secured several bladders and pieces of cork round the car. The general question being,
"Whether I really intended to go up?" I made answer that it was impossible to prevent my dropping into the
see, but I was confident some beat would arrive in time to my assistance.

Dressed in the uniform of the Note Royal Archers, five minutes before one clock I rose majorically, though, no with so great a degree of velocity as the former time. The wind was anoth-work. After studing the special of I fastend some of the strings which had been left loses, and began to notwist the roye of the little anchor. In three minutes from the time of posting the ground I previously moved precedibelarly over the Portla.

Exactly at one o'clock the balloon turned thrice round upon its axis, and was completely full; the bareneter at 21 in., the thermometer at 36°, wind south-west by west, and I was moving very slowly, with the most delightful scenery beneath me.

Half after one the balloon continued much in the same state, and the barometer had only fallen two-tenths. I age doing horizontally to the north-sast, and saw a least rowing towards Mussellburgh. I threw down a piece of cake about half a pound weight, but do not know wheelher it fell into the best.

Fifty minutes after one the wind was due west, and I therefore resolved to attempt landing on the point of

Archer Field. For this purpose I let go my small nachor about six hundred feet below my car, and began to descord; bett, finishing that I cause down with two much rapidity, and das to ballate nor the large anabots, I shot the valves and three down a both full of water, when about 2000 feet from the ground; by which massed punch over the point of shall and came again punch the water. At this electation the thermoster fell to 31°. I besteed my uniform great-cost, my last, and some other things to the upper hosp, that they might not be injured by my falling into the cost.

After minutes after two I touched the series of the water, not further than a mile and a laft from the recks of Firm and Land, but at the wind was pretty strong, and the balloon acted like a large and upon ploades, I make vary very fast, the water dashing against me and spartfling like silver. I turned road, and could see no but whatevery lock when about two miles and a laff from the south above, could indirectly although the wind, near Anstruther or Kilvenny, and therefore was noder no apprehensions, as my course was towards them and the inland of May.

The hallow was much aginated by the wind and assentines turned round, so that I was frequently towed into the water as high any breast. When short for multer from relief the revisit prevised has hely not, appearing and illuspraving exceeding to the trising and falling of the sewes, directing its corne from the Boss. On paying more statution, I may halply that it was a sole; but, at I was going with great rapidity, justicity passed their parallel, and then, as they had priced the wind, and made use of their mile as well as care, I assured sayed they would quickly reast to, and began to save the figure as significant by lad over them.

The scarce I approached the ocean the wind grew brider, and I began to be in doubt whether to cut away the halloon or not; but, after nature deliberation, I nestevel to keep it; for, as a tarknown now began to draw night, I should have been too small an object without it to be viewed at any distance, being at this time breast-high in the water.

As non as the best cause up I three out a strong repo, desiring the fisherment to make it fast; but the moment I got on bound they let it go, and the ballson was instantaneously out of sight! And now my situation was not the most confortable: heavy with remaining so long in the water, my hands herested with chinging to the hoop, and every limb waster, I set down, as well as I was able, in a loat full of fish, while the sharpnoss of the sir contributed not a little she heighten my distress.

A King's best som came np, and the grathesen very politicly invited no on board; but I was obliged to decition this politic offer, that J night show my gratition to the people who had taken me up. I landed on Artist Field about five olicids, where I found bit Nistlet's servant waiting to contact me to his master's house. I man thither as fast as possible, in order to make my blood circulate more freely, for the cold had been so intense as to frome my define.

Mr. Niebet was gone to North Berwick, and his charming lady had prepared for my arrival as if she had been sensible that I should land near their house.

When Mr. Siber returned, he read not refrain from pressally assisting mu to change my drow when, being quite refrained, I were drown to times on all pair compliances in the changed Mrs. Niche. The British waves who fit the higher naise of life may, I think, he presumeed the handsomet in Emerge in the case is when the higher naise of life may, I think, he presumeed the handsomet in Emerge in the them is written actions continuity go beneficed, which practice is also common in our own country jet and thou in write stations continuity go bareforded, which practice is also common in our own country jet the Inlain possently, with qual strength, relay is all respected feathers of completion. The reason of life I take to be that the Socks women are often obliged to walk in the wet, their streets and knows height good free from that inconvenience, while nor treated a livit earth, and for any concasion damps have worder shaded such as the size of th

I conversed with my hospitable hashed most part of the versing: he is a most inguiness gradienan and has redied several years in high. Our complaintmen first connected at Keley selvers, while others were density, we had a long conversation relative to Bonn. Naybo, do. Though at that time I entertained the highest spinios of his understanding, yet, as I had not that the hopomore of knowing his name, it was mon-hors before loadly resulted where or when I had eigeved his company, though both his person and manner were no strongly improved on any memory as he sport perfectly families.

I arose at nine the next morning and went to breakfast; after which Mr. Nisbet obliged me with a sight of his parties, which may rival the most elegant in lata. Though now the depth of winter, the well-stored bothouses bloomed with all the beauties of contrasted seasons and of various clines; but in the summer, when suring a powed out his west profusion, and the simple charms of Nature aid and are aided by the elegancies of art, what a terrestrial paradise must this be! I shall be strongly tempted to pay it a visit, and, with the friendly, hospitable owner, stroll through these regions of pleasure.

> These haunts where the Muses delighted might rove, And Nature, all lovely, would teach us to love; Where blasts from the North might forget to be rude; And care so our love should not dare to intrude.

At twelve oldeck Sir David Kinkck, with his one and daughter, eccompassed by Major Mackey, came and mixted me to his house, where I point a very happy afternous, and in the morning me of with Major Mackay for Elinburgh, where I found the generous inhabitants had opened a subscription to enable me to make another balloon; but, so I am confident mine will be found, I propose, with the most grateful thanks, to decline this eddigation; those abredy conferred upon me are sufficient to by a weight upon the feeling beart.

Réfore my arrival in Sorbinds sevent attempts had been made to bound a large fire-ballon, but all without seasons. The per may not be doubt large my low I considerable his stantistics 1 shipped pile his manifolity and midstriams by the endoed papers. Do not wrong use so much as to suppose that I have been consisted with string, down ally to deep the saverithing has now see than must I have offered the voice of string, down with you have been supposed to the string of the st

Your cordially offectionate

VINCENT LUNARDS.

#### TO MR. LUNARDI, ON HIS SUCCESSFUL AERIAL VOYAGES FROM EDINBURGH, KELSO, AND GLASGOW. By J. Tytler.

ETHERFAL trav'ller, welcome from the skies! Welcome to earth, to feast our longing eyes! Once more we, trembling, for thine absence mourn'd; Once more we bless thre from high Heav'n return'd. Bodotna greets thee from his utmost bounds, From Glotta's banks increasnt praise resourch : The winding Avon views thee in the sky, T enhance thy fame the tinkling murature fly. Applances loud the lofty forests fill : Admiring cohoes ring from hill to hill. With gen rous warmth each honest bosom glows, Each honest heart, explting, regise bestown, Pair Tweet beholds thee philips ofer his plains; Thy name resounds from all his tuneful swains; Thy rising honours Fame's loud trumpet spreads Where Grampian mountains rear their lofty heads; Beyond the space of old distain'd with gore. Where dreadful Rome her arms unconquer'd bore; Where, mourning, o'er th' ensunguin'd slippery field, Sad Scotia went her bravest heroes kill'd. Ev'n frozen Timle shall thy fame proclaim From all her barren rocks resound thy name!

But my, what Poor's, O fee'rise of the sky; (Though on thereof plaintes tempt to 6y,) 'The thy hold breast such shannless courage gave, When for below appear'd the warry grave; When now'ring through wast heaven's tecucadous heigh The Sevis grint herores first applied the yight; When slow decounding from the distant sixes The boundless (Second Seland Line) On who could guide time of or the vest perforal, March Vest Perforal County of the Cou

that how shall I to sing thy praise aspire? What Muse shall fill me with poetic fire? Shall I address the fabled pow'rs above, And boast that Phorbus will my yows approve? No, let me to some distant region fly, If such there be, beneath another sky; Go, court the horrors of wild Zembla's coast, Or, in the dark Commercian Regions lost, In abject exile hide my wretched houl, Or fly for refuse to the silent deal ! On me, also I the adverse heavins have lous'd, Releutless fortune hath her venceance pour'd ; Scarce rais'd from earth, and but to sink more low, And more severe to feel the fatal blow, The Whirlwind, or black Eurus stops my way, Or angry Zephyrus commands my stay;

Confusion, Discord, all my ways orpose And friends misguided prove my greatest focs. Yet though I mourn my fov'rite wishes crost, My hours, by Fortune or Miscordinet lest. My constant mind o'er each mischance prevails, My feeble pow'r yet adverse fate assails : Once more I try on wings of wind to rise, Like you to ride in trinmph through the skies; I try in vain ;-the bellowing thunder roars, The cath'ring tempest scowls along the shores: Fierce Notus unges on his furious course, Lost are my wishes, lost is all my care, And all my projects flutter in the air." Proscrib'd, destin'd, eb, whither shall I turn? In allent solitude for over mourn? Or shall my band, ure'd on by black descair, In monatirons quilt at once efface any care? With my own blood seal rain and disgrace, And brave the great Creator to his face? -Forbid it Heav'n | let Fortune rather shot Her yet remaining vengeance on my head; A wretched object let me rather lie To ev'ry miscreant as he passes by; In dull Oblivion let me rather sleep, As vile, nunotic'd, useless insects creep; Let fierce Repeach insulting ever wound, Envenom'd shafts of malice fly around, In wretched darkness he my noor abods By men abandon'd, and opposid by God !

But while in bapeless exile thus I moura-My mind with desperate gloomy passions torn. I see thee graceful and majestic rise, Mount on the winds, and triumph in the skies; Till envious clouds conceal they from our view, And eager Vision can no more pursue. At once Ambition points to Fame the way, Dissolving clouds of cold Despair decay; Celestial Hope again her influence show're, Again my soul calls forth her latent pow'rs. To follow thee my inmost bosom burns Templesous thoughts possess the mind by turns; Unconquer'd yet, with thee pay facey flies. My soul assiring yet explores the skies. Impatient now I long the ground to spure Like thee to rise, in serv cheriot borne; To leave the earth, to leave the elemia behind To mount on penious of the rapid wind; Beyond the reach of valgar ken to sour, Beyond the space where blust'ring tempests roar, To see bright Phubus pour unsulied day, White through wide heav'n he darts his cloudless my; To see the splendours of the Moon arise, And all the glories of the spansfed skies. Not as through Vapour's medium dull we view, The clouded concave of Etheren! bino: But as from Ætna, or the Alpine Hills. Th'exolted mind the glorious prospect fills; Where Gulaxy in purest flame appears, And wond'rous glories clothe the shining stars;

\* To understand these lines relating to my own minfortunes, it is | come to the ground with the same velocity that it accords from it, cessary to give a short history of the Edinburgh Fire-Balloon. The machine, from its size, was certainly capable of performing everything expected from it, provided a sheltered place for missag it could have been obtained, and a proper degree of heat applied. The former, however, could not be had. The place where it was first raised was exposed to the west wind, which blew so strongly during the first week of August (the week of the Leith Rocce) that it could not be inflated until the Friday evening, when the gallery took fire, and some of the chains suspending the store broke, which provented any further attempt at that time. An interval of calm intervened on the Saturday evening, which was made use of to inflate the balloon. The gallery was in little better condition than the preceding evening: nevertheless I was about to sten into it, when a sudden gust of whirlwind, common in this country in unsettled showery weather, expelled the rarefied air out of the balloon, and otherwise so much demand it, that no further attempts could be made that night. By continual pulling and tearing about, attempting to inflate it when it was evidently impossible, and other injudicious proceedings for which I do not think myself accountable, because I was not ot liberty, the paper with which the balloon was lined had been so reach damaged, that I now thought proper to take it out altogether, and cover the cloth with some kind of varnish, which might be less apt to receive damage from rough trope. This was done; but as a proper composition could not be afforded, the balloon, though capable of making one or two experiments, was yet far from being able to endere the fatigue it had to unlerge. There was now no gallery, and the stom with which it was to be heated, being very little short of three hundred pounds weight, was incupublic of being taken an : or, at any rate, without a gallery no store could be taken. I now came to the resolution of suffering myself to be projected into the air by inflating the balloon to the neacost, and being appended to it without any furnice, like a log or piece of bal-You will easily see that this was the tradition of a madeers, and which nothing but my desperate situation could excess. A firelaticon in this situation is a mere projectile, and must andoubtedly

unless the proves has a considerable quantity of ballast to break his fall as he descends by throwing it out. Of this it were cost to give a demonstration, if necessary; but it is not worth while, as you will at first perceive it to be true. Having, therefore, obtained one fine and forcemble morning, the balloon, new variabled, and very tight. was exposed to a very strong heat for near an hour. It was inflated to such a degree, that I am personded its power of ascension must have been apwards of half a ten, as a number of people could with great difficulty keep it near the ground. With this monstross power I suffered soyself to be projected upwards, seated in one of the small baskets in which earthenware is carried, without ballact, or indeed without thinking of any. The balloon set off from the ground with the swiftness of an arrow, but could not ascered more than a few feet, when it was stopped by a rope belonging to the most which held it up during the true of inflation. This broke its force were considerably; and even when freed from this, it then with such repulity that several of the sportators, terrified at the unusual sight, endeaworred to drug it downwards till the rope was forced from their hands. Thus my career was stopped, and I arose only a very small way, some my three hundred and fifty fort, others five hundred. For my own part, I had scarce time to teste the pleasures of an arrial journey; and during the little time I was in the air, I assured provid with looking at the spectators running about in confusion below. My reception from the ground was much more rude than I expected. and though insufficient to hart, was enough to seem use to proceed no more in this way. However, by particular desire, I did take another sup of the same kind a few days after, but with much more caution; for I would not now soffer the balloon to be so much inflated. and desired my nesistants to break its power as I saccraied, that I might only pass over the adjacent trees and houses. Even then the power of the balloon was very great, so that it overturned five or six people who attempted to stop it; and, indeed, from these two experiments, I am induced to believe, that the power of large tire-ballis muck greater than is commonly supposed, and that the received theories concerning them are erroreous.

The moons of Jove, without a tube to view, And entities beauties of the heavins pursue; See Northern Lights in flashing glory rise, And paint their colours of a thousand dyes: To view bright meteors like the Sun appear, And stream their glories through the empyreal sir; To try the strong electric Ether's pow'r, T'explore the sources of the gladd'ning show'r; Through treasures of the direful hail to fly, And yow the dread artillery of the sky; Laugh at the labours of the sons of care, And one them more like ofone so they are Transporting thought | I'll yet with Fate contend, Nor shall my boye to dire mufortune bend;

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Let lying Stander trumpet through the growd, Accuraed Hate proclaim each fault sloud, Detraction, Malice, and blue Envy burn, And each mufortune to misconduct turn : My mind unmov'd fair Science shall pursue; My hopes, my wishes, ever follow you; Each error past, Experience shall correct, And careful Pradence every step direct; Till mis'd from earth, I to the skies aspire, Conducted safely by devouring fire; To future ages then coarign my unm And stand thy Brother in Records of Fame.

A.D. 1785.

On the Continent, during the following years, Blanchard ascended from Brussels, Berlin, Douai, Hamburg, Liége, Valenciennes, Nancy, Strasburg, Nuremberg, Basle, Mulhouse, Metz, and Warsaw. It is worth notice that Alpine and other mountain ascents were unattempted till aerostation had given a stimulus to the exploration of the higher regions of our atmosphere; and it was not till the 7th August, 1786, that MM. Jacques Balmat and Paccard, were the first to reach the summit of Mont Blanc. Their steps were followed the next year by Professor de Saussure and Colonel Beaufoy. The French revolution now caused further experiments to cease; and, before it had subsided, aerostation, far from furthering the peaceable and intimate association of nations, that at its invention was anticipated, was now employed as an accessory of warfare, and a military aerostatic corps was formed in 1793, which proved of use, as will be hereafter told, at the battle of Fleurus.

Napoleon also used balloons for impressing on the Arabs the superiority of European arts over those of African

As far back as 1785 Blanchard had made a parachute, to which a dog had been attached, and taken upward by a whirlwind: when again on a level with the car he recognised his master, and commenced barking; but, being raised a second time, he did not reach the ground in safety till some minutes after his master. Yet Garnerin seems to be " l'inventeur breveté du parachute," as appears from the following Republican permissive :-

#### DEPARTMENT OF LA SOME

L'Administration central du Département, au Citoyen Garnerin, Rue Dominique, près celle du Bac

Paris, 2 Vendéminire, an VIII. de la République Française, une et indivisible.

CHTOYEN, We have received your letter of the 4th, in which you demand the act of declaration herewith given. Having formed the design of taking an aerial voyage for the discovery of atmospheric currents, and other observations useful to science, you propose to enter within the states of the King of Prussia, should the wind convey you to the north or cast; or into those of the King of Spain, should you be conducted to the south.

We give you this declaration, and we desire that no obstacle should impede you from obtaining the ends in view. However, should contrary winds convey you into states inimical to France, we should like to believe that you will there receive that succour and protection that General Buomaparte gave in Egypt to an English naturalist who was travelling in that country to make useful discoveries; for the sen solo cultivate the arts and sciences labour for the good of all nations, and aught therefore to receive special protection,

We wish you to observe, however, that in thus anthorising you to make this experiment we only have in view the progress of science, and therefore you must have no other aim; the wonderful success that has attended your previous voyages, and your descents in parachutes, of which you gave the first example, should not make you forget the prudence that in all cases should regulate your conduct. Believe, citizen, that our wishes accompany your enterprise.

"Selut et fraternité,"

LECOUTEULE. A. SAUZAY. SABATIER.

A few weeks later he received the following answer from "le Ministre de l'Intérieur":

#### LIBERTY, BEALITY

Paris, 21 Fraction, An VIII. (1841) do la République Françaire, une et indivisible. You offer me, Citizen, to assist with your aerostatic experiments the embellishment of the Fête of 1st Vendémiaire. I accept your offer, but these experiments should be limited to the following :-

1st. Two pilot balloons, to show the direction of the wind.

2nd. A gilt balloon to reflect the rays of the sun, and which will appear like a large star.

3rd. Your ascent and descent in a parachute.

For these three experiments you will receive 15,000 france.

If my offer suits you, I authorise you to commence at once all that is necessary for the success of the undertaking. LUCIAN BUONAPARTE.

## M. Depuis Delcourt says :-

"M. J. Garnerin had been sent by the Government in 1793 as a Special Commissioner to the Army of the North, and was made prisoner on outpost duty at Marchiennes. He was incarcerated many months in the fortress of Bude, in Hungary, where he directed his thoughts to acrostation.

" 'The love of liberty,' said he in the programme of his first descent in a parachute, 'so natural to a prisoner, gave rise to many projects to release myself from the rigorous detention. To surprise the vigilance of the sentries, pierce walls ten feet thick, throw myself from the rampartwithout being injured, were schemes that afforded recreation.

" Blanchard's idea of presenting large surfaces to the air to increase its resistance, and the known acceleration of movement in all falling bodies, appeared to me only to require a careful mathematical comparison to be employed with certain success. I applied myself to the problem. After deciding on the size of a parachute for descending from a rampart or a precipice, by natural sequence I devised the size and form of a parachute for a descent of several thousand feet by an aeronaut."

Delalande the astronomer gives the following account of the first experiment :-

" At 5 P.M. on the 22nd October, 1797 (1" Brumaire, An VI.), the citizen Garnerin rose from the park of Mouceau, a solemn silence pervaded the multitude: excitement and uneasiness was depicted in every countenance. When he had reached an altitude of more than 6000 feet, he cut the cord that attached him to the aerostat, which ascended till it exploded, whilst the parachute with the citizen Garnerin descended rapidly. The oscillations it underwent drew forth a cry from the spectators, and many women fainted. However, the citizen Garnerin descended on the plain of Monceau, got on horseback immediately, and returned to the park, in the midst of a crowd who loudly testified their approbation of the talent and courage of the young aeronaut. In fact, the citizen Garnerin is the first who has

ventured to try this hazardous experiment. He conserved the project in the fortress of Bude, in Hungary, where he was kept a long time as a state prisoner after the fierce combat of Marchiennes in 1793. I announced this success to the National Institute, and was heard with the utmost attention."

## CAN Y TYLWYTH TEG; OR, THE FAIRLES' SONG.

FROM grassy blades, and fenny shades, My happy commdes hie; Now day declines, bright Heaper shines, And night invades the sky. From neonlay practs, and thymy banks, Ta Dolyd's dome repair, For ours the joy that cannot cloy,

And mortals cannot share.

The light-latched door, the well-swept floor,
The bearth so trim and nest.

The blaze so clear, the water oner, The pleasant circling sest, With proper care your needs prepare, Your tuneful tabors bring; And day shall haste to ting the cast,

Ere we shall cease to sing.

But first I'll cropp where mortals sleep,
And form the blissful dream;
I'll hover near the maiden dear,
That kopen the learnth so clean;

I'll show her when that best of men, So rich in manly charms, Her Einion, in vest of blue, Shall bless her longing arms,

Your little abeaves or primrose leaves, Your acome, berries, spread; Let kernels sweet increase the treat, And flowers their fragrance abed; And when "tis site, will crowd the floor, In jound pairs advance, No voice be mute, and each shrill flute.

Shall cheer the many dance.

When morning breaks, and man awakes,
From sleep's restoring hours,
The flocks, the field, his house we yield,

To he more active powers.

While clad in green, unheard, unseen,
On samey banks we'll play,
And give to man his little span,
Has empire of the day.—One Sono.

#### ROBIN GOODFELLOW.

Mour wift than lightning can I fly About this sery within soons, And in a minute's space decary Each thing that's door below the moone. There's not a log. Or ghost shall wag. Or cry...-" Wase gobbin!" where I go; But Robin I

Their feater shall appe,
And send them home with Ha! bo! ho

Are seen week workers I meete,
As from their night sports they trudge bone
With counterfeiting value I greete,
And call on them with no to rame
Through woodes, through lakes,
Through begges, through lakes,
Through begges, through backes;
Or else unseene with them I go,
All to the nicke.

To play some tricke, And frolicke it with Ho! ho! ho! Sometimes I meets them like a man; Sometimes an ox, sometimes a bound; And to a horse I turn use can, And trip and trot about them round; But if to ride

My backs they stride, More swifte than winds away 1 go, O'er bedge and lands, Through pools and pends,

I whiery, laughing Ho1 ha1 ho1
When lads and lasses merry be,
With posents and rich innestes fire.

Unseens of all the companie,
I est their cakes and sip their wise.
And to make sport,
I puff and soort,
And out the candlo I do blow;
And maids I kies.

And maids I kiss, They shricke—Who'e this? I enswer mught but Ho! bo! bo! Yet now and them, the maids to please, At midnight I card up their wood; And while they skeep and take their coo-, With wheel to threads their flax I poil. I grind at mill Their malt up still,

I dress their berny and spin their ten ;
If any walks,
And would me talks,
I wend me laughing Ho! ho! ho!

Fat. Over hill, over date,
Thorough bash, thorough heire,
Over park, over pale,
Thorough flood, thorough fire,
I do wassler everywhere,
Swifter than the neotes aphere;
And I serve the fairy queen,

To dow her orbs upon the green:

OR fairy eless.

Whose midstight revels by a forest side.
Or founting, some leithed peasant sees,
Or downshe sees, while orferined the moon

When mos do traps and segines as: fas loopbobe, where the vermines creeps, Who from their feels and houses get Their ducks and gross, and lambs and sheeps: I apply either in. And section a vermine taken my that their fast of their fast of their fast of their fast but when they throw

Approach me neare,
I leape out, laughing Ho1 ho1 ho1—Best Jonsee.

The covalige tall her pensioners be:

In their gold costs spoke you are; Those be relikes, filey faccure, In those freekles here their nervours: I must go week smoot develops here. And hang a pearl on every coverlips ear. Facewell, then blob of aptive, I'll by pune; Our queen and all our elves come here men. Milliammer Nields Bream.

Sits arbitross, and nearer to the earth Wheels her pole course, they on their mirth and dimelentent, with jectual music charm his ear; At ourse with joy and fear his heart reburnds.

Militox.



EAVES AND THROTLE-DOWN.

In days of old, when Arthur fill'd the throne, Whose sets and fame to foreign lands were blown, The king of elves and little fairs queen Gambolf'd on heaths, and danced on every green; And where the july troop had led the round, The grass unbiblen rose, and mark'd the ground; Nor darkling did they dance,-the silver light Of Phote served to guide their steps aright, And, with their trapping pleased, prolong'd the might. Her beams they follow'd where at first she play'd, Not longer than abe abed her horns they stay'd; From theory with airy flight to distant parts convey'd. Alrew the rest our Britain held they dear. More solemnly they kept their sabbaths her And made more spaceous rines, and revell'd half the year, I speak of ancient times, for now the swain, Returning late, may puss the woods in vam, And never hope to see the nightly train.

DETDEN.

They are flown, Beautiful fictions of our fathers, wore In Superstition's web when Time was young, And foodly loved and cherish'd-they are flown, Before the wood of Science! Hills and voles. Mountains and muors of Peron, ve luve lost The enchantments, the delights, the visions all, The cliin visious that so bless'd the sight In the old days romantic, Naught is heard Now, in the lenfy world, but earthly strains-Voices, yet sweet, of breeze, and bird, and brook. And waterfall; the day is silent rlse, And night is strangely more! the hymnings high-And immortal music, men of ancient times Heard, ravish'd oft, are thoun! O ye have lost Mountains, and moses, and meads, the radiant throngs That dwelt in your green solitudes, and fill'd The sir, the fields, with beauty, and with joy

Intense-with a rich mystery that awed The mind, and flung around a thousand hearths Divinest tales, that through the enchanted year Pound proclouste listeners?

The very strongs Brighten'd with visitings of these so sweet Ethenal creatures! They were seen to rise From the charm'd waters, which still brighter grew As the pemp pessid to land, until the eye Scarce here the uncarthdy glory. Where they tred, Young flowers, but not of this world's growth, arose, And imgrance, as of amaraothine bowers, Pleated upon the breeze. And mortal eyes Look'd on their revels all the buscious night; And, nareproved, upon their revishing forms tiazed wietfully, as in the slance they moved Voluptuous, to the thrilling touch of harp CARRINGTON.

Eye hath not som it, my gentle boy; Ear hath not heard its deep song of joy; Dreuma camos pictare a world so fair : Sorrow and death may not enter there; Time deth not breatise on its fadeless bloom; For beyond the clouds, and beyond the tomb; It is there, it is there, my child.

Mon HEWAYS

The joys of heaven are without example, above experience, and beyond imagination; for which the whole creation wants a comparison; we, an apprehension, and even the Word of God, a revelation,-Konnis.

> The sung Of heaven is ever new; for daily, thus, And nightly, new discoveries are made Of God's unbounded wisdom, power, and love, Which give the understanding larger room, And swell the hymn with ever-growing peaker,

#### CHAPTER V.

## REMARKABLE ASCENTS FROM 1800 TO 1825 - NAPOLEON'S EXTRAORDINARY OMEN

Hoch übern niedern Erlenleben Soll sie im blunen Hinmelszelt, Die Nachburin des Donner's, achweben Und greusen an die Sternenwelt. Above this mether world shall she
In heaven's azure vault appear,
The neighbour of the thunder be,
And border on the starry sphere.
Scinizza, Song of the Bell.

LONDOR TO COLCEDITE IN FORTI-FIVE MINUTES—GARMEN'S DECONT IN A PARACHUTE—COUNT LABBOCCAM AND DR.
GARMENT PALL, INTO THE ARMAINE—WINDITHE EXPERIMENTS AF ST, PUTILISHED—SHE, BOT AND GAY LUBBAC—
A REDOUGD SACRET TO 32,000 PIET ANDROXES' ORDER "PRINTED LYBERGE PRIN EN OF ANDROXETY SALE BIRDOR
NOTIVERAL EXCUSIONS—FIRST ATTEMPT TO CROSS THE RESS CHANGE PRINTED LYBERGE PRINTED TO THE REA—SECOND ATTEMPT
ROYSMAND.

1802.—Mons. Garnerin came to England in 1802, and made many successful voyages; one remarkable for rapidity, on 28th of June, when he ascended with Captain Snowden, R.N., from Chelese Gardens, and came down near Colchester, in forty-five minutes.

The excitement this ascent caused is shown by the following statement:—"Not only were Chelsea Gardens crowded, and the river covered with boats, but even the great road from Buckingbam Gate was absolutely impassable, and the carriages formed an unbroken chain from the turnpike to Ranelagh Gate,"

The lalloon passed immoliately over Duke Street, and kept a line between the river on one side, and the Strand, Fleet Street, Ladgate Hill, and St. Paul's Churchyard on the other. No balloon had ever passed so directly over the metropolis, or had ever been gazed on by so many spectators. Mons, Garnerin wrote to London as follows:—"I take the earliest opportunity of informing you that, after a very pleasant journey, but after the most dangerous descent I ever made, on account of the boistcross weather, and the vicinity of the sea, we alighted at the distance of four miles from this place, and airly from Ranelgalt. We were only three-parties of an hour on the way. To-night I intend to be in London, with the halloon, which is wron to pieces. We ounders are all over bringing.

On the 5th July, Mons. Garnerin ascended from Marylebone, and descended at Chingford, a distance of seventeen miles, in fifteen minutes, and attained also during this interval a height of 7800 feet.

On the 21st September, after having made many ascents in all parts of the country, he tried an experiment with a parachute, and ascended from St. George's Parade, North Audley Street.

I will give extracts from his own account, which appeared in the 'Annual Visitor':-

. . . . . I had reached a height of 10,000 feet, and measured with my eye the vast space that separated me

from the rest of the human race. I felt my courage confirmed by the certainty that my combinations were just. I then took out my knife, and with a hard firm, from a conscience wild of represely, and which had never been lifted against any one but in the sold of victors. I cut the cord. My balloon rose, and I felt myself precipitated with a velocity which was checked by the sudden unfolding of my parachute. I saw that all my calculations were inst, and my mind remained calm and screne. I endouvoured to modulate my gravitation, and the oscillation that I experienced increased in proportion to my approach to the breezes that blow in the middle regions. Nearly ten minutes had claused, and I felt the more time I took in descending the safer I should reach the ground. At length I perceived thousands of people, some on horseback, were following and encouraging me. After one bound I quitted the parachute without accident. I was instantly seized and carried in triumph; but sickness had been produced by the rocking, which always had this effect on me, so I obtained permission for a few minutes' repose, and then got on a horse. Among the horsensen I saw the Duke of York and Lord Stanhope. Among the congratulations I had the honour of receiving I was much flattered by that of Sir Sidney Smith, who came to me with General Douglas, " on purpose," as he said, "to shake hands with a beave man." This compliment is of the greatest value from the mouth of one of the bravest soldiers in Europe. I can now answer the fallacious query of a correspondent to one of the public papers, who asks "Whether I did not play an infamous part in the French Revolution?" There are in France but two-my brother and myself-of the name of Garnerin, and we have played no other part than that which honour may avow in all countries, and at all times. It was upon her frontiers, and in the bosom of her armies, that we endeavoured to be useful to our country. I might refer, in England, to incontestable evidence relative to my conduct. I am sure H.R.H. the Duke of York would be disposed to do me the justice I deserve, if he recollects the action of Marchiennes, on the night of 31st October, 1793, in which I had the honour of disputingwith a handful of men, that post, after it had been surprised by a strong detachment of his army. The action was extremely bloody, and terminated in a surrender, which made me H.R.H.'s prisoner, and occasioned me thirty-one monthe' imprisonment in Austria.

1803.—Count Zambeccari, Dr. Grassati, of Rome, and St Andreoli, of Ancona, ascended in a Montgolfière from Bologna, on the 7th October, 1803, at midnight; the inflation not having been completed before that time, and the populace being too impatient for the experiment, to wait till morning. They took up with them lanterns, and other things necessary for observing the instruments at night. The balloon rose with a most surprising velocity, and soon reached such a height that their fingers were almost frozen by the cold, when both Zambeccari and Grassati fell into a state of deep sleep. Andreoli retained the use of his senses. About 2 a.m. the balloon began to descend. When they came-to they found themselves falling into the Adriatic. The lantern had gone out, and was with much difficulty lighted. They fell into the water, and were drenched. To avoid greater harm they threw out ballast, and rose through three strata of clouds, and their clothes were covered with rime. In this situation they were deaf, and unable to hear each other speak. About 3 A.M. the balloon again descended, and bounded in and out of the sea till 8 a.m. When on the coast of Istria, one Antonio Bazol picked them up in his ship. The balloon, left to itself, ascended to an amazing elevation, and fell in some part of Turkey. The height they attained was conjectured to exceed five miles. Bulletins of their health were published daily at Venice and Bologna. Count Zambeccari, who had suffered most, lost the fingers from one hand.

1804.—In the summer of 1804, M. Robertson ascended from St. Peteraburg, and the following is the account of his companion, Sacharof. The object of this voyage was to ascertain the physical state of the atmosphere, as the Academy were of opinion that results differing from those of De Luc, Sanssure, and Humboldt, on the summit of mountains, would be obtained:—

Our Charlière rose slowly at 7.15 r.m. from the garden of the 1at Corps of Caslets; the wind was north-cast.



FRANÇOIS PILATRE DE ROZIER.

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The difference of the atmosphere when over the Neva caused us to descend; throwing out ballast, we again ascended. At 8.45 r.w. we had a beautiful view of the Nawski Islands and the whole course of the river Yamelianoska. By 9.20 s.w. our barometer had fallen from thirty to twenty-three inches. I threw out at this altitude a canary and a dove; the former fell with precipitation, and the latter sailed down to the village immediately below us. We now threw out all our bullast, a spare greatcoat, and the remains of supper, so as to enable us to rise higher. About 9.30 r.m. the barometer fell to twenty-two inches. At this height we saw half the sun; on account of the fog we could not say whether the other half was hid by the horizon or by a cloud. Experiments were here made. My pulse and breathing were the same as on the earth, the former eighty-two and the latter twenty-two per minute. There were white clouds at a great height over us; though the sky was clear we could observe no stars. I proposed to continue our voyage till sunrise, that we might enjoy that glorious sight, but Mr. Robertson could not accode to my proposal, on account of our ignorance of the country and our want of ballast. I took out a speaking-trumpet, and directed the sound downwards; after ten seconds I heard an echo; this was repeated, but I was unable to look at the barometer, as it was already packed up. We descended rapidly, but when our bundle touched the earth we perceived a slight inclination to rise. As the wind was strong we dragged it along, and the shaking this occasioned caused most of the instruments to be spoilt. At 10.45 r.m. we left the car on the estate of Counsellor Demidef, and were assisted by his boors and servants.

1804.—I give Mr. Wise's account of the scientific experiments made in August and September of this year:—

ARRIAL VOTAGE OF GAY LUSSAC AND BLOT -- THERE EXPERIMENTS. -- SECOND ASCENT OF LUSSAC --- HIS EXPERIMENTS.

After the capitulation of Cairo, the bulloon which had been sent to Egypt was returned to Paris, after the French army had returned from the African deserts. Two young and ardent French philosophers, MM. Biot and Gay Lussac, proposed to undertako an aerial excursion, in order to examine the magnetic force at great elevations. and to explore the constitution of the higher atmosphere and its electrical properties. For such a philosophical enterprise they were eminently qualified, having been educated together at the Polytechnic School of Paris, and both of them deeply versed in mathematics; the former indulging in a wide range of study, and the latter concentrating his efforts more on chemistry, and its application to the arts. Their offer to Government was seconded by Berthollet and Laplace; and the celebrated chemist Chaptal, then Minister of the Interior, gave it his patronage and warm support. The war-balloon which had once been in Egypt was now given to the custody of Biot and Gay Lussae; and the same artist who constructed it was, at the public expense, ordered to refit and prepare it, under their direction. Besides the usual provision of burometers, thermometers, hygrometers, and electrometers, they had two compasses and a dipping needle, with another fine needle, carefully magnetised, and suspended by a very delicate wilk thread, for ascertaining by its vibrations the force of magnetic attraction. To examine the electricity of the different strata of the atmosphere they carried several metallic wires, from sixty to three hundred feet in length, and a small electrophorus feebly charged. For galvanic experiments, they had procured a few discs of zine and copper, with some frogs, to which they added some insects and birds. It was also intended to bring down a portion of air from the higher regions, to be subjected to a chemical analysis, and for this purpose a flask, carefully exhausted, and fitted with a stopcock, had been presared for them.

The billions was placed in the grades of the Concerning of the Concerning of Mobils, ferminy the Carward of St. Matrin; and no point were spread by (i, C. collectile is precing whether night contributes to the greater aftity and convenience of the experimental vegagors. Excepting being user ready the their assort, these states of the concerning of the contribution of the Contributi

feet. These clouds, viewed from above, had the ordinary whitish appearance; they all occupied the same height, only their upper surface seemed marked with gentle swells and undulations, exactly resembling the aspect of a wide skin covered with mow.

MM. But and Gay Laman new began their experimental operations. The magnetic needle was attracted, a small, by from, but the from fail injustable that this time to determine with accurage in teach or decilidate, owing to a above ratery nucleo with which the bulkow was affected. In the mean which therefore, they made other observations. A value in physical policy and on the consequent tasts, excited the mervous commoden, and consistend the decomposition of water. By rejecting some more hallost they had actioned the attributed of 4900 feets, and attempted sentent on the state of 8000 feet. At this great elevation the animals which they carried with them appeared to suffer from the ratity of the six. They let off a value it is animals which they carried with them appeared to suffer from the ratity of the six. They let off a value by the way writing, haming a is animality most. The theremoneter that fills the 500 Februaries lay with the principle of the same and the suffer way writing, haming a is animality most. The theremoneter that fills the 500 Februaries glown. But of these they were the principles of the state of the same and the

What propiond them next was the difficulty of observing the smillation of a distortly-suspended anguards scaled. But they are remarked, no looking activatively down upon the surface of the configuration of order, that the hallows slowly revolved, first in one direction and then returned the contrary way. Between the appears material their intervent of the proper of the results of the contrary way. Between the appears material the contrary way of the contrary way of the time is also with a similar of the contrary way. Between the contrary of the time is a similar of the contrary way. In the contrary of the contrary way of the contrary way of the contrary way. In the contrary of the contrary way of the contrary way

At the abitude of 11,000 for they librated a groot linest, which for wave jünctly; but, soon feeling itself askendon in the mide of an unknown come in trivermed and well-to the stays of the shifts. Then, materially first contempts, it took a second light, and alashed downwards to the earth, destribing a tortoon yet almost propositionate rack. A pigon, which they let of under insulic-circumstance, affected as more crises specially. First on the stage of the ori, it result a while, measuring as it were, the broad the of the mineral condensation and the stage of the ori, it result a while, measuring as it were, the broad the other at the present and the stage of the ori, it result a while, in the original value of the state to try its wings on the third demost till, there a few strakes it guided unto conditions, and whilting in large circles or quink, like the brinked open, it producted itself towards the axes of extended colony, where it was a lord many large.

It was difficult in those body and ruber lumin region, to make electrical observations; and the stration of the scientific margines was, belokes, coughed chiefly by their magnetical experiments. However, the jet alone from the ore an ionitated metallic wire of about 250 feet in length, and ascertained, by means of the electrophenes, that the upper out infinished reminous or supplies electricity. The aperiment was averall mines proached, and it seemed to corroborate fully the previous observations of Statoures and Valta relative to the increase of electricity met with in according the attacophere.

The diminsten of temperature in the higher regions was found loss than what it generally in at the mass distribed on nonstanks. The hypometer, or rather hypometry of a dissemuse alreades registed treasted algebras in properties to the shiftshee which they attained. At the develope of 1,5000 for it had changed from 100° it no? Hers still the constained state their of the higher states inder then that of the lower, we are infinited to constitue a fallendors. In fact, the federations of the hypometry depend on the relative attraction for bundled prosoned by the esthutous entangles, and the medium in which it is immersed. But air has it designation to retain noisemn

I have always found the sun oppressive when sating ever dense simila of clouds, which is caused by reflection. This was the case in this instance.

<sup>†</sup> This want of diminution was caused by the reflection of the sun from the cloud stratum below them.

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always augmented by rarefaction, and consequently such alteration alone must insterially affect the hygroscope. The only accurate instrument for accretaining the condition of air with respect to dryness is founded on a property of commentation. But we shall afterwards have consists to refer to this.

The lablast now being almost expended, it was nowlved to descend. The aeronauts, therefore, pailed the upper valve and allowed part of the hydrogen parts to coays. They droped gradually, and when they some to the height of 2000 fact they must be attained of clouds, extending being-instally, but with a surface beaved in gentle oracide. When they rescaled the ground in sopic wave must be not to go the hallows, which denged them in the next to some distances along the fields. From this activated and even designed situation they could not extricted theseries valued the charging a great questively of go and therefore give up to the lab of resulting (see James 1994), where the contribution of the contri

Several philosophers of Paris now desired that Guy Lousse should mount a second time and report the different deservation at the greated steastion be could attain. Experience and interested him to review the inappearits and to adapt it better to the setal elementations. As he could only count the vibrations of the anaportic model during the very about Interview shick nearours! between the contany relations of the helicos, be pricred on as host at the large ship of the contract of the contract of the set of the s

At forty minates after nine o'clock on the morning of the 15th of September, 1804, the scientific voyager ascended, as before, from the garden of the Repository of Models. The barometer then stood at 30:66 English inches, the thermometer at 82° Fahr., and the hygrometer at 574°. The sky was nuclouded, but misty. Scarcely had the observer reached the height of 3000 feet when he observed spread below him, over the whole extent of the atmosphere, a thin vapour, which rendered the distant objects very indistinct. Having gained an altitude of 9950 feet he set his needle to vibrate, and found it to perform twenty oscillations in 83", though it had taken 84:33" to make the same number at the surface of the earth. At the height of 12,680 feet he discovered the variation of the compass to be precisely the same as below; but with all the pains he could take he was unable to determine with sufficient certainty the dip of the needle. Gay Lussee continued to prosecute his other experiments with the same diligence, and with greater success. At the altitude of 14,480 feet he found that a key, held in the magnetic direction, repelled with its lower end and attracted with its upper end the north pole of a needle of a small compass. This observation was repeated, and with equal success, at the vast height of 20,150 feet—a clear proof that the magnetism of the earth exerts its influence at remote distances. He made not fewer than fifteen trials at different altitudes with the oscillations of his finely-suspended needle. It used generally to vibrate twenty or thirty times. The mean result gives 4'22" for each oscillation, while it is 4'216" at the surface of the earth—an apparent difference so extremely small as to be fairly neglected.

During the whole of this gradual around he retired at abort interval, the state of the larensser, the thermosers, and the hygenesizer. Of these observations, securating in all to trestpowe, he has given a stablest view. We report, however, that he has suplected to much the disease at which they were made, since the results appare to have been very materially modified by the progress of the day. It would likewise have been desirable to have encapsored them with a register result every half-hour at the Observatory. From the surface of the centre to the height of 12,115 field the surpensitor of the antiques decreased registration from \$\frac{1}{2} = 127 \text{ phase-lacky's assign by a Phase-lacky's assign by a surface of the vertex contracting the progress of the vertex contracting the progress of the vertex current of sir which, so the ship witnessed, we continually from the heated granule. From that point the temperature disminable, with only alghed deviations from a perfect regularity. At the height of 15,005 feet of the vertex contracting the progress of the contraction of the vertex contracting the progress of the contraction of the vertex contracting the progress of the contraction of the vertex contracting the progress of the vertex contracting the progress of the contraction of the vertex contracting the progress of the vertex contracting the progress of the contraction of the vertex contracting the progress of the vertex contracting the progress of the vertex contracting the progress of the vertex contracting the vertex contractin

thermometer subsided to 32.9°, on the verge of congelation; but it sunk to 14.9° at the enormous altitude of 22,912 feet above Paris, or 23,040 feet above the level of the sea, the utmost limit of the balloon's ascent.

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From these observations no conclusive inference, we think, can be drawn respecting the mean gradation of cold which is maintained in the higher regions of the atmosphere; for, as we have already remarked, the several strata are, during the day, kept considerably above their permanent temperature by the hot currents raised from the surface through the action of the sun's rays. If we adopt the formula given by Professor Leslie at the end of his 'Elements of Geometry,' which was the result of some accurate and combined researches, the dimination of temperature corresponding to the first part of the ascent, or 12,125 feet, ought to have been 40° Fahr. It was actually 34-7', and would, no doubt, have reached to 40', if the progressive heating of the surface, during the interval of time, were taken into the account. In the next portion of the voyage, from the altitude of 14,000 to that of 18.636 feet, or the breadth of 4636 feet, the docrement of temperature, according to the formula, should have been only 161°, instead of 20-7°, which was really marked-a proof that the diurnal heat from below had not yet produced its full effect at such a great height. In the last portion of the balloon's ascent, from 18,636 feet to 22,912, a range of 4276 fiet, the decrease of heat ought to have been 154°, and it was actually 18°; owing, most probably, to the same cause, or the feehler influence which warm currents of air from the surface exert at those vast elevations. Taking the entire range of the ascent, or 22,912 feet, the dimination of temperature, according to the same formula. would be for the graduation of temperature in ascending the atmosphere 85-4". The decrease actually observed would be 67:1°, which might be raised to 80°, if we admit the very probable supposition that the surface of the earth had become heated from 82° to 94.9° during the interval between ten o'clock in the morning and near three in the afternoon, when the balloon floated at its greatest elevation.

After making fair allowances therefore, on account of the operation of deranging causes, the results obtained by Gry Lusses, for the greatation of temperature in the atmosphere, appear, on the whole, to agree very nearly with those derived from the formals which theory; guided by delicate experiments, had before assigned. This graduation is evidently not uniform, as some phile-spheres have assumed, but proceeds with augmented rapidity in the more elevated regions. The same conclusion results from a control inspection of the facts which have been study for dever-lower, when the control is the control of the control

The hyprometers, during the secent of the bellow, hold a progress of quite to regular, but tending advisorably towards depress as the height of 900 for both pain damped non-200 for 270 for 270 me and determined to obtain a finite form that the higher of 1000 form to most 270 at the shifted of 15,100 feet. From this inferior limit the hyprometers advanced again, yet with soon finitestance, to 2019 while the polishood at the behigh of 15,600 feet. Above this altitude for excitations we adopt, though other including to issuiding. There are exist no tools however, the state of the progress of the

no other-late or the vine, when the are best for its other way in an interville or an an account data to educate data. Contracting the contracting of the contractin The hallow was new completely distended, and not more than 33 the of hallow transiond; it began to Jupp, and Guy Joness, therefore, only supplies to descent. It included very grouply at the not of about a miss in eight minates; and after the layer of about thirty-four minates or at three-quarters after three o'clock, the another tookshall the ground and instartly secred the over. The regying alliqued with great one more the hands of St. Georgean, about sixtees mike from Rosen. The inhabitants flooked around him, offering him assistance, and eager to graftly their creation.

As see as he reached Paris he hastened to the haboratory of the Polytochaic School, with his finds, containing air of the higher regions, and proceed to analyse in it to herose of Thread and Girosat. Open-dimensional moder water, the liquid readed into them, and appearedly half filled their equacity. The transported air was found, by a very dedicate analysis, to contain exactly thou ame propertion as that collected more it emfree of the earth of the contract of the contract

The secents performed by MM. Not and Gay Losson are memorable, as being the first ever undertaken acidy for related art feature. It is impossible and to assist the same superior mosts, specifing, while they finds in the highest regions of the stros-phere, with the same compount and precision active specific production. The second precision delivers are considered as a second precision delivers and considered as a second precision of the strost precision. The second precision is not an attained was likewise secretained. The facts moted by Gay Losson, relative to the state of the thermaneter at difficunt heights, appear possurely to confirm to be well-the throught gasing for the graduation of temperature in the atmosphere, but many interesting points were left untotabed by this philosopher. We are sorry that he had the Series montaining, will know on the very relative the second production of temperature in the atmosphere, but many interesting points were left untotabed by this philosopher. We are sorry that he had the Series montaining, will know do be regrete that he was and previously with an hygometric and a photometre, of Loslic construction. These delicates instruments could not have faithed, in his hashe, to furnish important other factorises are constructed as a photometre, of the contraction of the second production of the precision of the production of the production of the second contraction. These delicates instruments could not have faithed as the stress of the second contraction of the production of the production of the production of the second contraction. These delicates instruments of the second contraction of th

#### SUGGESTIONS ON THE USE OF BALLOONS SOON AFTER THEIR DISCOFERT.

Balloon have at different times been thought capable of such application. It has been even proposed to employ their prover of searches as a mechanical form. This single is respected edificiant, it as allebered, to noise variety from minor, ere to transpert edebble and place them on great devasions. We can comby imagine situations reduce a balloon could be used to alwhambage, such as to noise without any smalledings, ere one rate to the topol adjugic spirity let the power would then be purchased at a very disproportionate exposes. It would require four and a half promited of now over it of time, with square questions of a subject soil, is yield propose gas sufficient to mind help remote for now it of it, may then question of endpoint eath, you'd propose gas sufficient to mind promited on the contract of the proposed proposed and the proposed pr

But to a shifted and plations explication of bulbons we may yet look for a most constall importunent of the interactions of microsology. Confined the merice of this globs, we have an eliment instantian of what posses in the bulby regions of the atmosphers. All the changes of weather, which appear on experience and perjudent prosent of the clouds, examine the orientations of their formation, and mark the prevailing correction of the clouds, examine the circumstance of their formation, and mark the prevailing corrects, be well per bulby reserve, in part, the well that omnouls them nightly operations. It would be quite prestriably, we onceive, to result and exceeds of ever mine, where the six would be fart times more attenuable the cellulary. All this hallow of fively feet discover, if proposly constructed, night be sufficient for that entermose secont, though not more form benefating, but his mir't the best miled from adaptive in the woolwidth fieldilly to external circumstance.

<sup>•</sup> He would suffer from a distinction of atmospheric pressure. At inities to would have but 0300 pounds. From what I have experience of the earth at cellulary sized man routains an atmospheric pressure of our 25,000 pounds, while at the height of seven is one concequence would cause at the insureme height of seven miles.

Perhaps the spicke-sed pains and abert respiration which some travellers have experienced on the summins of hely monatonia should be strainfunct delicity to the subdenance of their transition and the swenty of the cold. The people of spino live conflectably 5000 feet above the level of the sex; and the shepherich of the launtle of Antisana, the highest hallotted spin in the knows would, who breach, as an elevation of 12,000 feet aft with the soul, three-dilths of the small density, are nowine delicitate in boulds or vigour. But the intenseess of the cold is, peopleshy, what the resolute deserves would keen must in drost at the hight of wear mines. This decrease of peopleshy, what the resolute deserves would keen must be drost at the hight of wear mines. This decrease of the cold of the spin of the strains of the spin of the strain of the spin of the spin of the strain of the spin o

Much could be done, however, without risk or material expense. Bolloons from fifteen to thirty feet in diameter, and corrying register theremoment and harmonters, might be explade to assenting alone to displace between eight and twelve-miles. Departched from the centres of the great continents, they would not only determine the activene gradations of cold, but indicate by their flight the direction of the regular and periodic whole, which doubties obtain in the highest registee of the atmosphere.

But we will not enlarge. In some happier times such experiments may be performed with the mealous concurrence of different Governments, when nations shall at least become satisfied with cultivating the art of peace instead of war.

1804.—Zambeccari's experiments in a Montgolfière, in October, I will leave to my Tenth Chapter, where the greatest suffering shall be contrasted with the greatest enjoyment; it was made, like his previous ascents, from Bologna.

## NAPOLEON'S CORONATION BALLOON.

Las Cases, in his 'Private Life of Napoleon at St. Helena' (vol. iii, part 2, p. 313), says of him, "He mentioned, as a sort of prodigy, the circumstance of the balloon which ascended at his coronation having fallen, in the space of a few hours, in the neighbourhood of Rome."

Coming from Sudiis, on our forement emign, Two mighty engles fell, and there they precid, Gorging and feedbug from our soldiers' lands. This merning they are fied away, and gones; And in their study, do ravens, cross, and kites Fly oler our heath, and downward look on us, As we mere sickly peey; their shadows seem A canege most fatal, under which One army lies, ready to give up the ghost.

This remarkable incident well illustrates the fathlism of Napoleon's character. The man of density believes in the desting of man; he relies solely on his star; and, from the height of his station, the newly elect, consecrated Emperor and King, by a Pope, sees an evil omen in a fortuitous circumstance, insignificant for any other but himself. The account is as follows:—

It was at this time that the form "Salut et fraternité," as well as the republic " une et indivisible," dissuppear; and the Minister of the Interior, S. E. M. de Champagny, now writes to Mons, Garnerin, "aerostier des fêtes publiques," in the following tone: -

I send you, sir, a copy of the programme of the rejoicings which are to take place at the coronation of His Majesty the Emperer. I look to that seal and activity you have already displayed for the prompt execution of the necessary preparations.

Your estimate of the cost has been placed before me, and I hope that you will be able to economise, as the Government has decided on not spending more than 23,500 france on your account.

CHAMPAGET.

At 11 P.M., on the 16th December, Garnerin allowed his "colossal machine" to rise from the square in front of Nôtre Dame. "One sees it rise slowly and majestically. Not less than 3000 lights add to its beauty. It is, indeed, a fine sight; but who could then guess the direction it would take, or the sensation it would cause?" However, on the following morn,\* at break of day, some of the inhabitants of Rome see at the horizon a brilliant globe coming towards their city. It is soon over St. Peter's and the Vatican; descends, rises again, somewhat torn : keeps near the ground, and falls into Lake Bracciano.

Here its pursuers first learn from whence it had come; for, on drawing it from the water, they read in gilt letters on its vast circumference, "Paris, 25 Frimaire, An XIII., Couronnement de l'Empereur Napoléon par S.S. Pie VII."

For distance and rapidity this flight would always have been remarkable; but, considering the day on which it took place, it appears almost miraculous. A circumstance in addition, very trifling in itself, became of great importance in the eyes of Napoleou. A political turn, would any one believe it? was given to the voyage of a "ballon perdu." The balloon, on its course near the ground, left part of its crown on an angle of the tomb of Nero. The Italian papers, not being under such rigorous censure as those of France, innocently related the coincidence; some, however, added malicious remarks, injurious to the Emperor.

This came at length to the ear of the master, some one even speaking of it at one of his levées. Napoleon showed his displeasure, and ordered that uo further remark should be made about Garnerin's balloon,

Napoleon had formerly applauded the courage of Coutelle, chief of the serostatic corps, and appreciated its importance for the engineer department. He had also, when in Egypt, ordered Conté to send up balloons, to show the Arabs the superiority of European arts over those of old and degenerate Egypt. From the coronation, then, of Napoleon, dates his antipathy to acrostation. The military acrostatic school of Mendon was abandoued, and the results of experiments lost. Who knows but that this might not have caused him to turn a deaf car to Fulton, when he came to the camp at Boulogne, offering to apply steam to navigation? Little causes often engender great effects. Garnerin ceased to be employed by Government, and to Madame Blanchard was confided the ascents at fêtes. Thus the hirth of the King of Rome, on the 20th of March, 1811, was announced by hulletins scattered from a balloon that rose under the direction of Madame Blanchard; whilst Garnerin, in his notes, remarks on the poorness of this affair, and sighs that it had not been intrusted to him, who had made flights from Paris to Aix-la-Chapelle and Mont Tonnerre, beside spending nights in the bosom of the clouds." Garnerin, moreover, offered to cross the sea, and announce to " La perfide Albion" the birth of the royal child.

The coronation balloon was suspended in a corridor of the Vatican, where it remained till 1814, with an inscription and date, but omitting any reference to Nero's tomb.

Iu 1806 the death of Vincent Lunardi is thus briefly chronicled by the 'Gentleman's Magazine':-

July 31.-Died in the convent of Barbadinas at Lisbon, of a docline, Mr. Vincent Lunardi, the celebrated

A.D. 1806

<sup>.</sup> In the Disries of a Lady of Quality (p. 78) it is said to be 26 hours : further particulars on this must singular incident would be extremely interesting.

† Fatract from Depuis Delcourt's 'Manual d'Acrostation.'

In the same year Curlo Brioschi, astronomer royal at Xaples, in company with Andreasi, the first Italian accurate, attempted to rise from Xaples to a greater height than Guy Lusse reached. From the expansion of the gas in the rare atmosphere their balloon burst; but is fragmented becked the velocity of the docent, and they fell to the ground, with no immediate material riplary. Brioschi, however, contracted a disease, from which be suffered till his death in 1833.

1807.—The nocturnal aerial excursions of M. Garnerin in this year must be ranked among one of the most enterprising and adventurous.

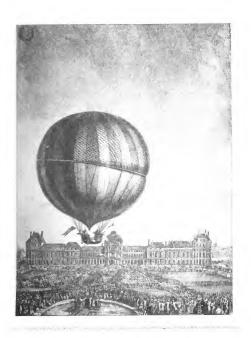
Mr. Wise gives the following concise account of these adventures:-

At show offold on the evening of the 4th of Angust, he ascended from Troll, at 1 brin, under the Bunian Rigg as a bakes of the power but subsided between Parson and Risson. His fallows was illiminated by twenty langus; and as cleviste all deaper of communication between these and the hydrogen gas which it might be accounty to discharge in the course of the super, the nearest of the Banger was forester for distant from the lablos, and conductors were provided to carry the gas away in an oposite direction. After his owners, necket, which had been to 1 from Fred, second to bin nearety to not show the earth, and Paris, with all the lamps, appeared like a plain radiabel with Banisons spots. In ferry minutes he found labsord at an electric of 13.270 focts when, in consequence of the difficults of the bullows, he was suche the necessity of delegating part of the owner, in the contraction of the contraction of the such as the contraction of the contraction of the such as the contraction of the

This same intropid aeronaut undertook a second nocturnal voyage on the 21st of September, 1807, in the course of which he was exposed to the most imminent danger. M. Garnerin, prognosticating an approaching storm from the state of the atmosphere, refused to be accompanied by M. do Chassenton, who carnestly requested it. He ascended, therefore, alone from Tivoli, at ten o'clock, and was carried up with unexampled rapidity to an immense height above the clouds. The balloon was then dilated to an alarming degree, and M. Garnerin, having been prevented by the turbulence of the mob, before his ascent, from regulating those parts of the apparatus which were meant to conduct the gas away from the lamps on its escape, was totally incapable of managing the balloon. He had no alternative left, therefore, than with one hand to make an opening, two feet in diameter, through which the inflammable air was discharged in great quantities, and with the other to extinguish as many of the lamps as he could possibly reach. The aeronaut was now without a regulating valve, and the balloon, subject to every caprice of the whirlwind, was tossed about from current to current. When the storm impelled him downwards, he was forced to throw out his bullast to restore the ascending tendency; and at last, every resource being exhausted, no expedient was left him to provide against future emergencies. In this forlorn condition the balloon rose through thick clouds, and afterwards sunk; and the car, having struck against the ground with a violent impulse, rebounded from it to a considerable altitude. The fury of the storm dashed him against the mountains, and, after many rude agitations and severe shocks, he was reduced to a state of temporary insensibility. On recovering from his perilous situation he reached Mont Tonnerre in a storm of thunder." A very short period after this his anchor hooked in a tree, and in nine hours and a half, after a voyage which had nearly proved fatal to him, he landed at the distance of three hundred miles from Paris.

1809.—Blanchard died, after making sixty-six ascents.

1811.—On Oetoker 7 of this year Mr. Sudler, accompanied by Mr. Burcham, ascended at Birmingham at 2.20 r.w., and by 4 r.w. had made a rapid flight of 112 miles. The direction was at first north-cest; they could at one glance behold Lidchfeld, Coventry, Tamworth, and Atherstone. When approaching Leiester they perceived the wind was carrying them due east, to Market beeping. Near this day attained their greatest devarious.



(24 miles), from whence they saw the towns of Peterborough, Stamford, Wisbeach, Crowland, &c. Perceiving the lower current was toward the north, Mr. Sadler descended, and alighted near Boston.

1812.—The first attempt to cross the Irish Channel was made by Mr. Sadler, who, on the 1st October, 1812, ascended from the lawn of Belvedere House, Dublin, in presence of a great multitude, receiving his flag from the Duchess of Riehmond, and the military bands plaving. In the account published the following notical description is onoted from Darwin:—

So on the aboreless air the interpid Goat, Lamnch'd the vast occurse of this bourpost ball, Journeying on high, the silkes castle gibbs, Bright as a matter through the acture takes; O'er towns, and towers, and bemples wins its way, O'er towns, and towers, and bemples wins its way, Siltent with aptern'd gyes unbeatching crowds, Furner the Southing wonder to the clouds; And thank'd with transport, or benumb'd with faze, Watch as it rises the diminishid applexes. —Now less and less—and now a speck is seen; And now the fleeling rade obtrudes between. The calm philosopter in other and posture is yet with the calm philosopter in deter and yet less the sole atoms and breathes up passer gales, Sees like a map in many a warfing hine, a Bound Earth's Stop philos ber Incid waters shine; Sees at his fact the forky lightning glow, And hours innocesses thunders room below.

His own account savs :-

From my elevated situation I was enabled to overlook the ridges of the Wicklow Hills and bring within the field of vision the distant ocean. The country to the south and west of Dublin, interspersed with villages and cultivated fields; the amphitheutre of hills; the broad expanse of occan; the bay; the small breakers beating on the islands and the rocky shore; the sails of vessels glancing in the sun; all combined presented a prospect which fancy may contemplate but words can give no adequate idea of," and to onjoy which was in itself a reward for any hazard that might attend my undertaking. When immediately over Ireland's Eye, I perceived that a rent made at starting was extending; to reach which I was obliged to tie ropes across the lower part of the notting to form a sort of ladder, and with my neckeloth I succeeded in closing this orifice. I then entered the upper current, and was carried by it in the manner the annexed map more clearly demonstrates. On again entering the lower one I was carried to the southern show of the Isle of Man, and in a few minutes more could have been in Cumberland, had I not desired to alight in the vicinity of Liverpool. Having full confidence in the power I possessed, from the quantity of gas and ballast, I ascended to the upper current, and, when carried by it to the north-west of Holyhead, I judged this to be a convenient augle for making for the coast of Lancashire. I descended into the lower current, possed south of the Skerry Lighthouse and across the Isle of Anglesca. At 4.30 p.m. I was abreast of the Great Orme's Head, and by aid of my glass could see the Bidston Lighthouse, beyond which I wished to alight; but in this I was disappointed; for, as the evening closed, the wind shifted to the southward, and I was driven in a short time out of sight of hand. In this situation I howeved about, endeavouring to find a favourable current; but as it was now 5.30 p.m., I determined at once to descend, -a resolution in which I was confirmed by observing five vessels beating

\* THE SPHIT OF BEAUTY

The Spirit of Bousty natures her light And whoch her course in a joynes flight! I know her track through the balany sir, By the blossons that cluster and whiten there: She leaves the tops of the intensities greets, And genus the valley with expiral shows.

At morn I know where six rested at night, For the ruces are grading with dway delight; Then she mounts again, and around her filing A shower of light from her purple wings, Till the spirit is drank with the mosic on high. That siloudly fills it with century!

At mon she him to a cool retreat, Where however elms over waters meet; She diagons the wave, where the green leaves dip. That scales, no it earls, like a maiden's lip. When her treundons bearen would hide, in vain. Pren her broot, the bope that she lette again. Al ere she hangs o'er the western sky

Dark clouds for a glorious carropy: And round the skirts of each excepting fold. Ske points a border of crimons and gold, When the lingering ambounts love to stay, Where their gold in his glory has panced away. She howen around us at twilight hour.

When her promace as felt with the despect power; She mellows the larebespe, and crowds the stream With shadows that fill like a fairy dream; Still wholving her flight through the gludesims air, The Spirit of Hounty is overywhere.—H. Dawns.

9

down the Channel; and entertaining the confident hope that I should neet with that prompt assistance which my circumstances would require, I opeaed the valve, and in a few minutes was precipitated into the sea about a min astern of them; but, to my great meridiantion, I found that the vessels continued their course. Thus descrited, I was constrained to reserved, and, throwing out some ballest, the balloon spring upwards, and I again attained an elevated station to look out for some more friendly aid.

At the time I described the sum was near setting. Already the shadows of evening had cost a dauly has over the face of the costs, and a crisina god purplied the type of the waves, a lavering in the evening beams of died away in distance or backs in from against the sides of the result; and before I now from the not her obtained beams the describe the face. I consider the sides of the result; and before I now from the not her obtained beams of the sides of the result in the sides of the result in the sides of the sides o

If was a considerable time before I again observed any propect of anisothors; and so the temporary day which I then enjoyed was detecting and behavior has the evening, thicking into today, work soon observable where I descended lower; and it was with much pleasure I discovered a vessel, which by signals gave me to understand and included, our up descending, to stell on a soil. I, at the one matter observed to order the beward, not of which a included as the observable of the beward, not of which a included in any observable to the beward, to of which a included in the observable of the beward, to of which a included in the observable of the beward, the of which is a considerable of the observable observable of the observab

As the ear touched the sea, the wind, which had risen with the evening, acting on the balloon, swept it along with so much velocity that the vessel astern, notwithstanding every exertion, was unable to come up with it; my sole dependence was now therefore placed on the vessel which still remained ahead, and in order to impede as much as possible the progress of the balloon, I cost out the grappling-iron; and at length taking off the greater part of my clothes I tied them to it and sunk them, in the hopes that the increased resistance in the water might tend to retard the rapid motion with which I was dragged along through the sea, now agitated by the increasing breeze, which swelled almost into a gale. This, however, had but little effect, and I found myself reluctantly compelled to weaken the busyance of the bulloon by reducing the quantity of gas; I accordingly opened the valve, and the car immediately sunk, being left to its own power, and incapable of floating with the quantity of bullast, the greater part of which remained naexpended. In this perilous situation I supported myself for a short time by hanging to the case hoop; but, as the balloon resting partly on the water still presented a considerable object on which the wind acted with full force, impelling it forward with great rapidity, I was under the necessity of clinging to the netting as a last resource, and in this situation was frequently plunged under water by the relling of the balloon, being able with difficulty to keep my head at intervals so long above the surface as to prevent sufficultion; but even thus circumstanced I did not lose the recollection that, however dangerous the chinging to the balloon, it was still on it my ultimate safety must depend, and that to preserve the power of the gas was an object of the first importance. I therefore passed the valve-cord (which I still firmly held) around my arm, so as to prevent the possibility of losing it, should weakness compel no to relex my hold of the netting.—an event which was now fast approaching, as my strength was completely exhausted, and under the apprehension of which I took the precaution of passing the meshes of the net once or twice round my head, and in this state encountered the danger of drowning from the rolling of the balloon.

Emmered in the waves and entirely exhausted, it was best at internal I caught a glimps of the reusel, and when this occurred I was to faint to make up vice be board to an other the necessary operations for excurring any article. I, however, abserved that the sulkes second fearful of coming too now, bet the hallon should get contrapiled with their ringing, and, avaling good of the first moons of temporary strength, i. colled to them, a load as any feeble state solution of a to make a long of the fear the solution of temporary strength, i. colled to them, a load in any feeble state solution of a long review part of the fear to solution of the contrastity, my discretisor were the end in industryl steps, the greater part of the govern amount of the capital, and the velocities of the contrastity, and the velocities of the contrastity, and the velocities of the contrastity, and the velocities of the contrastity of the

I remained for a considerable time. The halloon and car were next secured, the latter particularly with considerable labour, in consequence of the quantity of bulbot that remained: a fact which, abded to the unexpealed gas, coverines me that I possessed sufficient power to have remained in the six for a very long period with cose and safety, and to have accomplished at once the passage of the Chunnel had not my ardent desire to neach Liverpool operated as a counterinting grainchia.

At the time of my accord obseved a efectorstates rock place, in itself of a trifling nature, but which for its neighborhy observes to be metriced. At the extremely the what I've surrounded by a multitude of multi-suck and make a being the work. If he magnited the balls on not attended its rapid course, as implied by the wind it shimmed along the worse. If magnind they had been attracted to the care by the frangeauti of olds and breast while fell upon the water; and in this supersition I was specify confront-fie, growing baller by dispose, they at length readed upon no in a covered and the surround of the framework of providess which remained familing on the water. On mentioning the ricomstates to the miles, I was informed that the highe were of the species designated by materials may "have from the configuration of the surround of the

The resolute board of which I was taken I found to be the "Victory," a hearing falser, from Dogde, in the hofe Max, commanded by joids be, and load for Liveryo, be with per our crosses as accordingly directly, and where we surrived in only at a very early hour on the menting of the 2nd of Krisher. In this eight J hole ever apprised the most bills and flattering attention, nor did the same warm feeling fall to enablity intell on the present crossion. Already had the news of my arrival resoluted in this histories, and, notwithstanding the only hour, a crowd of autism precisions had assembled to green in placing. We stand exhausted I. Saend appeal uniqual for the moment to seet that comparisations, and anordeningly went in batth the "Truested in visit of the resonant to seet that comparisations, and anordeningly went in batth the "Truested visits of visits four recommendation which are situation consistent of the contraction, domining day of others and every accordance of the contraction, the continuity of the contractions, the contraction of the contraction of the contraction, and the contraction of the contraction, and the contraction of the contraction of the contraction of the contraction of the contraction, and the contraction of the contractio

On the evening of the 3rd of October I arrived at Holyhead, and emburking on board the packet for Dublia, was, in the formson of the 4th, after a tempestons and dangerous veyage, driven into Sherrios, sixteen miles from that city, to which place I immediately set out, and on the evening of the same day was again restored to my family and to those friends whose anxious and affectionate which shall attended my serial journey.

# "In not in mortals to command success; But we 'Il do more, Someounius---we 'il deserve it.--- Apatson.

1817,-Mr.Windham Sadler, with the intention of carrying out what his father had already attempted, ascended from the Portobello Barracks, Dublin, at 1.20 p.m., on the 22nd of Jnne, having received his flag from Lady Jane Loftus. The wind was W.S.W., and he intended to effect the passage with the utmost rapidity; yet, after passing through a cloud, he rose unwittingly to an altitude of 21 miles. The current there was not the same, for, on descending through a snow-shower, he found hinself over the Hill of Howth. Having now entered the current that was favourable, his chief care was to keep the balloon in it; and this he effected by the counteracting powers of gas and ballast. By this means his course was a direct line across the Irish Channel. " . . . . I enjoyed at a glance the opposite shores of Ireland and Wales, with the entire circumference of the Isle of Man. A fleet of twenty-one vessels, among the many single ships, formed a striking object." He noticed also the shadow of the balloon on the water, and the beautiful colour given to the sea by the setting sun. At 6.45 he alighted a mile south of Holyhead. The evening was serenely calm, and the balloon, when anchored, remained at twelve feet from the ground, motionless. He adds, with some pride, that he was the first aeronaut who had successfully accomplished the passage of the Irish Channel.

"Sir George Cayley proposed a public subscription for the purpose of ascertaining how far the principle of balloons, supporting heavy burdens in the air, may be made useful as a medium of conveyance.

- "When the subscription amounted to 1900t, he suggested that an Annual Committee of seven members should be appointed, and that no experiments should be undertaken but by order of this Committee, with the advice of such engineers as they shows to consult.
- "Towards the attainment of this object he himself offered 501., but did not wish any one disposed to forward it to subscribe on a larger scale, as he conceived that a greater amount might be most probably obtained in smaller sums.
- "We suppose, from no further mention of the subject, that Sir George's project fell to the ground,"—Gentleman's Manazine, 1817.

### JACOB'S DREAM.

This sum was sinking on the mountain-none This gazeń thy vales of beauty, Dalestina! And lovely from the desert now the moon, Yet lingering on the hemion's purple line, Like a pure spirit o'er its earthly shrine. Up Padna-Ann's bright, abrupt and bace, A piligram teiled, and oft on day's decline Looked pale, then paused for evi's delicitous air,

The summit gained, he hadt, and breathed his evening neaver.

He spread his cleak and atembered—darkness fell Upon the twilight hills: a sudden normal of aliver trumptes o'er him secured to swell; Clouds heavy with the tempest gathered round; Yet was the whiteful in it accurate hound; 1 Still deeper rolled the darkness from on high, Gipanire volume squar volume wound, Abova, a pillar absorbing to the sky, Below, a mighty see, that spread inconsantly. Voices are heard—a choir of golden strings; Low winds whose breath is fonded with the rose; Then chariet-wheels—the nearer rush of wings; Pale lighting round the dark pavaline gloves; It thenders—the resplendent gates uncleas; Par as the eye can glance, on height o'er beight, Rice ferry waving wings, and star-crowned brows, Millions orn millions, brighter and more brights, Millions orn millions, brighter and more brights,

Till all is lost in one supreme, unmingled light.

But, two books the sleeping pilgrins stand, Like chembelane, with first mighty pinene. Finel, sun-beight syes, and books of high command; They tell the patriache of his pherons down; Father of constitues myriade that shall come: Sweeping the land like littless of the son, Bright as the start of between from vellight's gloom, Till He is given whom negets long to see, And limed's spekedd like is crossed with Drity.



JACOB'S DUKAN.

## CHAPTER VI.

#### REMARKABLE ASCENTS FROM 1825 TO 1849

Alone, on a wide, wide, sea, So lonely 't was, that God himself Scarce sects of there to be.—Connance.

SHEAT SCHOOL OF THE CONSIDER OF THE CONTROL OF THE

1826.—Ix June, 1826, Mr. Green ascended alone from Boston, in the presence of 20,000 people, and thus describes one of the many solitary and successful voyages he accomplished.

... The balloon milling due wost passed between Swinsdaud and Herkington, in a direct line for Grantham, when immediately over Sr-Joch Theordily park; Botton resembles a mass of rubble oversing out one serve; on descending I entired another current that carried me towards Neural, and I alighted at the sest of T. E. Welly, E. Sp., soar Plottforfel. The humater showed my greatest addition to be two Pen 2 miles.

In July of this year he made a night ascent,

Al 19.15 x.1 loweded from the Vurshall Gardens. We kept the like of the Thames. Notesthalassing the cloudy state of the atmosphere, not leisely deprived of the light of the mose, I could indicately not the scattle. In Batterns and Wassboweth, where the wheat was made for cetting, its appared like absets aprod on the ground; the jought allow who address, and the trees and Decompts beink; relaiges with pagings appared like mose of langus resting on the water; Butterns and Drusy, without them, like both planks. By all of Decy's anderly lang I read all decisions of a surface and the protein is light excent than three-quanters of a mile, we obscurded all Existenced; a lorse-parted was the only protein so the spet, but on mount of the deal culm further solutions was not required.

> Look upon the night: As where fore a pumpe, with meneright Fills the viol, bellow, mirroral siz. What are year—"Dipostille of become fore, Whether the mose, into her chumber grav. Lasers midnight to the guiden mars, or Clinks with diminish'd beams the sures step: Thirds by the mars years from the sures step: Thirds by the mars years from the sures step. Thirds by the mars years from the sures step. And the me stars rath through them, diss not for. All this is besufficial every bond—"SMLLEX.

1827.—Mr. Clarkes Green made his sixty-ninth ascent from Newberry, in Berkshire, under very discouraging circumstances. He was accompanied by Mr. H. Sinnmons, a gentleman of Reading, who was deaf and dumb. The following particulars of this temposituous voyage are given by Mr. Green:—

The morning was very squally, yet a great number of visitants had assembled on the ground before 2 r.m.; at which hour a trendenous storm of hall, rain, and thender occurred, the wind at the time blowing such a brush that the ball-on could servely be kept down, although bashed with two tons' weight of iron, and held by the retarning attempth of one hundred nea.

Retweet a said 2.55 the choice dispersed; but the wind continued to range with undustal farty the whole of the evening. At 8.55 th Letpeq thin the ten with Mr. Simman, and gree the weed 7.65 they? "The memoral the machine was illuscentaries of the weights, it was torn by the violence of the wind from the nestitutes as develor with the velocity of lighting in a nonth-accordigateinction, and, in a very short spoor of the statistical as evening of two miles. At this sittinde we previously direction, and, in a very short spoor of the statistical as evening out and a length they because using it and a that moment any one was enabled by the most artiful as the geodesic contained paid of themselve because it was a situated as a statistical as the statistical as a statistical as the statis

With very trifling variations we continued the same course until 7.15 r.m., when we descended to within free bundred feet of the earth; but preciving from the disturbed surface of the rivers and lakes that a strong wind existed near the earth, we again an-evaled and continued our course till 7.50 r.m., when a final descent was safely effected in a mondow-field in the parish of Crawley, in Sourcy, visuate between Guildford and Hersham, and fifty-sight miles from Norderry. This stormy vegage was performed in one bear and a ladic.

#### MR. WISE'S ASCENTS IN AMERICA.

1835.—Wise, the most practical of American aeronauts, has left us a lucid history of Aerostation, published at Philadelphia in 1850; from which I take the following account of his own experiments. His first ascent, from Philadelphia, is thus described:—

On 2nd May, the bellows being filled, I reviewed them to be 1, go, and before I could fairly say "Goodwhy, geneticent," the sortful alway supersign pre-pully above the reach of abstractions. Not Relieved a context would have pre-pulled sortful the reach of a better discuss the followed as context would have pre-pulled and the sortful and the sortful and a solid context as records as though down were food immovably to the spot, when all of a subsidie the very air begand to review them with the shows that followed. The multilated appeared to be as until rejuded at the preside a plant of the solid context of the s

Having now but sight of the great throne of people that surround-that as starting, and studing over a large virt, at least and is shown it, altifory and shane, with a low undeaduply amensuring paint raing up from it; the lablous showly writting and triading, as it were, between two contending currents, cowing a fittering levere amount now, while I was standing in the our written atte, out, to be colocking second, below, show, and in every discretion, strange emotions perculod my mind. Grander had ever been a delightful these to me, but this was more than greatest and the higher absolute of the human simble theomogeneously convey! I was appearly avalencing from a magnifected frame, casting up you upon a scene of reality that appeared for more grand and magnifected that the desars itself, strange-freigh-sever passing theorigh, up mind 1 Febr grounded in body, the three was a indescribable consistent on a principle of the several property of the property of th

The balloon was retained in the eddy it had reached for several minutes, and until it was lightened sufficiently to rise above it, which was done by entting off and throwing overhoard a heavy flower-wreath which had been twined around the car. These flowers, as they fell from the car, were taken for birds by those who watched the progress of the balloon with telescopes, as I was afterwards informed. Besides this, the car was hanging so near the balloon, that I was anabled to dotach the tin tube which was in the neck of it, and which, in this instance, was unnecessarily heavy; but, as the disposal of the wreath had lightened the machine sufficiently to enable it to rise above the eddy, I did not throw it overboard at that point, and upon consideration found it would not be safe to do so until I should set over a place where no human beings would be endangered by its descent. After the balloon had risen above the lower current, and the eddy which invariably exists between two currents, it took off in a direction eastward, nearly on a line with Arch-street. This I was enabled to tell by the map-like appearance of the city, the market-houses being in the next street south of it, which made a good mark to distinguish the streets by. As I passed slowly over the city, its murmaring noise rose up in medulations of variable intensity, giving it a melancholy musical effect, in some measure rescubling the sound of an Æolian harp. The current from the west being very gentle, it required full twelve minutes to carry the machine from the Schnylkil to the Delaware, during which time I feasted my eyes upon the panoramic socuery of the city and its precincts, occasionally running the eye along the serpentine folds of the Delaware to where it was lost in the clouds which skirted the horizon all round. The Schnylkil seemed of too little interest, when viewed from that height, in comparison with its larger neighbour.

When I racked the Dekement I three workboard he seek-pipe of the ballow, which made a runking sould in the descent until it plotted into the water, which limed delimitely, thinged is was one and also cein surface. As I consuld the Dubwares the view is and down for a deliment of twenty or flirty rules each vary as instructures and goals beyond consequent, and yet surve sentent in a speciment that had source. The effect of the river of the consequence of the conseque

Burns bright, and gonius times his load namorial lyre.—Pressur.

O Nature I by impassional hearts along The greenine channes are felt. The values maind Sees but the shudow of a power unknown; Thy folder beauties beam not to the blind And a consul throug, to grow-lling hopes resign if But they who high and folly thoughts impries. Adver there, in solution glory shrinced, the that distinct face, where levels a pine, for

an optical districts which discreases as you revoke from it. At the greatest distrains I attained, which was lower, amile and a high the superavers of the world around me animumal a shape of from like the which is made by plaining the wards operated by the central moving all the time of its light as the world optical superavers of the world and proposed to the control of the proposed of the superavers of the world with the centre of the part of the proposed of the proposed

After 1 had crossed the belavare and rended a print five or six nikes on the Jerop side of it, I make proportion to decord, as 1 discovered the balloan was now gradually sinking from the Joss of gas through its imprification, which made me fiel as correctful as Adam when he was explicit from the garden of Edos. After being in the imprer regions of the stam-sphere one hour and a quarter, I made as and descret have Illudiable its a village should be in also delated from Philadelphia, and currently shown that evening, where I received the

congratulations of many friends.

Now that I had really origined the planears of an aerial vagan,—viewed the earth from a point in page which was isolated and unabstracted, forcide by give upon one of the most interesting and rivined scene that which was included and an included and the properties of the contraction of the contrac

Another ascent was made in July, from Lebanon, Pennsylvania, when the weather was extremely warm.

There were (he mays) defects in the rigging of the balloon which developed themselves in the high and rarefiel regions of the atmosphere, that placed no for a while in a very perilous situation.

At 3 colock no. I left the earth with a levere from the north-wort. In a few minutes after, a ponormal view of innamerable unline, with the board during the of where of the Sampelman, was madded to the view. I consol the Boaling and Hierarching transplate at the fine pare below the term, and although histories of the contract of the state of the top and the state of the part with at angle and and although the product weight as a proof at least on the state on the state of the state part and hald no to specify the state of the state part and all the states and priving the occusion much the appearance and spirit of that in which a ferry shape per load-long along in mettled print, bending as results. If the own the state of th parts of the ball-on rigging—getting into folds of the flaceid part of the balloon—which latter liability occurred on this occasion, and deprived me of the use of that all important regulator.

Having now got for show the mist, and not less than three miles above the curt, in a scaperature of Zharing been within trestry-few minutes trunsderred from a swanth of st<sup>2</sup>, which the thermometre likeband when I left the arith,—the world below exactly visible from the intervening dis-shorted stratum of sit; my core harring like a backing, which for a while both to be a commois on the gos in the hallow enderouring to essenge its inglight, situated care-logs; the valve-spee below of inside the machine; the serial ship will bounding and gyranting promated—first a degree of extrement that can be bette insigned that and emerited.

All this difficulty arose from a want of practical knowledge in the art which must be acquired in this, as in any other business, before we can avoid consequences arising from such deficiency. In the first place, the valverope was too frail in this machine; instead of a substantial cord (cod-fish line I find the best), this was only common seine twine. The car was also rigged too near the bulloon; this may have been observed already by the intelligent reader, where it is mentioned in the account of the first voyage, that the car was so near the balloon that I was enabled to untie the neck-pipe in the lower orifice of it. On this occasion I had it hanging at least three feet lower from the balloon than before; but when I got to a height in the atmosphere where the gas sustained but half the pressure it did at the time of leaving the earth, it naturally diluted accordingly, and all the part of the balloon that was flaced when it started was now required for its increase of bulk. For this increase the space within the cords and network between the equator of the balloon and the concentrating keep above my head, to which the car was hanging, was insufficient. Having no way to lot off gas, -oven the lower critics of the balloon containing the neck-pipe, which answers for a safety-valve when properly rigged, was doubted up between the concentrating hoop and the lower side of the balloon, which was now swotlen to its utmost tension, -- I endeavoured to reach the lower part of the balloon with a knife, but, by straddling across with my feet in the open-work of the basket, it could not be reached by at least two feet. From the hissing noise of the gas which was making its way through the small channels of the compressed neck of the Iulloon, I knew that something must give way soon. As I did not know at that time that so large a surface of fabric as is contained in a machine of that size would inevitably meet with friction enough, in falling through the atmosphere, to bring it to a velocity where an acceleration must cease, and the at a rount where its speed will not cause across consequences from contact with the cartle. I was apprehensive that it might be my last voyago,

In souther amount a report like that of subbody leaving an infinitel payer-lag, such as loop forquestly amone themselves with inference that the lealism had rest, and, at the same time, some of the conde-two of them-separated from the concentrating loop; and that side of the balloon at which this tody pions a quickly ladged and, and insurability the stroophers cannot the meeting of all the with a which this tody pions a quickly ladged and, and insurability the stroophers cannot be meeting of all the with a which they vapour. This was the consequence of a mixture of warm hydrogen with cold stroophers. The phylogen in a lulion is always warmer than the surrounding size, when the su is is inline; one is plothers surface. The explains was comed by the netherly the principle was greatly explained and this pipe by the must feet, and we have the new them. All those was the contribution of the trendy four—which was the number in this machine—field not went to endanger my simulate must be all the second rather be how relieved not be one extent from the very precision condition is which had been as in some test previously, it still destroyed that mathematical strength existing in its complete state, which make need that one house from the contribution to the surface of the surface of the state, which make need that one house from the contribution to the memorial previously, it still destroyed that mathematical strength existing in its complete state, which make need that since to be for material part for all destroyed that mathematical strength existing in its complete state, which make need that since to be for material part for all destroyed that the contribution of the state to be for material part form.

After the explosion of the lower part of the hallon, it commerced a thready rapid decort, and as the stransphere had jet condistribly dearer than it is allow raw but a least), I could more easily distinguish the force of the contrary beautit. On observation I found the hallow was gradually desconding on the village of Wamelsder. Here I received a subtle beau a value of manderly, ple a conquery of visioners who were obeleduing the Marines Begulitzan invitably at this place. Although I find determined to the the ballows saids to be ground as seen as it produces the produce of the produces of the produ 134

Thus ended a voyage, after having been in the atmosphere one bour and a half, full of interest, excitement, and a great deal of instruction. So far were these difficulties from discouraging me, that they, upon the other hand, distude not by so and aperfect the deficiencies in my apprantus.

On the 1st October he made an ascent from Lancaster, and thus describes it :-

In a host two minutes after I statered the cloud stratum, the balloon energed from the op. Just as it we presented up the upper after of the stratum, I lead the cloud system quite warm, and immediately, on energing from it, this warmath was hereaved to a degree of touspecture above that of constrable feeling. A purguodly straiging sensation was also produced up not them part of any presso with verse regarded to the main report. Bull attributed to the hydrogen, which was let of while pussing through the clouds, some of which home to surprise through it learns granted to the hydrogen, which was let of while pussing through the clouds, some of which home to ballant in the car, a considerable spacetric power, and having morely on submitted pounds of ballant in the car, a considerable spacetric power than the card on the considerable spacetric power than the considerable of the content, in a some as the work of the content of t

I noxt discharged gas until the Intermeter stood at 23 inches. At this height, it being but a short distance above the cloud surface, I found the temperature very congenial, and continued the rest of the voyage, varying by barometer from 23 to 22 inches. In the rise and fall of the balloon above the clouds, which occupied twenty minutes, it described a spiral circle; and, on coming near to the surface of the clouds, I recogtrised a familiar tune of martial music, which I afterwards learned was the very tune played by the musicians of the city battalion of volunteers, who on this occasion formed a corden around the secension ground, they being invited to attend and participate in the enjoyment of the spectacle. An opening in the clouds which occurred for a moment also developed to me a watercourse below, which I took for the Conestogo. My course now lay, as near as I could judge, towards the south; but, in order to be more certain concerning my whereabouts and direction, discharged gas and darted down through the clouds; but when below them, the country appeared so rough with forest hills, and the space between the hills and the lower cloud surface so shallow, I quickly threw out some ballast, which sent me up again partly into the clouds. Hearing a cowbell and the sounds of a west-chopper's axe, I hailed in the following manner: "Halloo!" to which I heard the reply, "Halloo!" I next inquired. "How far is this from Lancaster?" which in a few moments was roturned by "How far is this from Lancaster?" Believing this to come in response as an inquiry to know whether I wished to learn that fact, "the distance to Languager," I repeated it again in very measured accout. This was again responded to in like measured accent, apparently to my mind with an intent of nuckery. Being in the clouds, and not able to see things either above or below, I felt somewhat nettled at such clownish display of wit; and in a very audible tone of voice, while the foregoing was still reverberating on my ear, sung out, "You are a fool!" which in a very few seconds was assured in an equally distinct and measured time of  $e^{-\gamma}$  for any  $\mu(e^{-\gamma})$  when it multicely flatised upon my mind that it was the close of upon over when, which equives near satisfied by the dright general-mass of  $e^{-\gamma}$  can are found with his for we have a found on the contraction of  $e^{-\gamma}$  and  $e^{-\gamma}$  with the flat for bosons are manners as though a whole register that easily the revision of the entries of  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  are the entries of  $e^{-\gamma}$  and  $e^{-\gamma}$  are the entries in the desired in which was a cottage, and before it a non. If for one we thread upon a greatest properties in the close in the flat of the entries of  $e^{-\gamma}$  and  $e^{-\gamma}$  are  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  are  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  are  $e^{-\gamma}$  and  $e^{-\gamma}$  are  $e^{-\gamma}$  and  $e^{-\gamma}$  are  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  are  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  are  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$  and  $e^{-\gamma}$ 

Having now become interested in this singular phenomenon of exhal continued making experiments in it. I found when milling mone inherdred first down the dual structure, that the exhicing some and was short, not some an encourage of remaind by the next as when in the closely one immediately because it times. 2011 I could hear the short of the closely one over the best of the closely one to we have a finite finite or the closely one to the short and sharp; a solar that downs, one of the closely, one over the short and sharp; a solar that when the sound of a bell, and the chopping of an axe. From those experiments, I think one load claps of thunder coordinate and the contraction of the closely of of the

The wind just above the cloud region appeared to be vibrating from various points of the compass, causing the balloon to describe a kind of zigzag course in a southerly direction necessarily making the progress in that direction somewhat slow for acrial travelling.

Keowing my course would carry me on to the bay shore, and having been aloft nearly two hours, it was evident that I must be nearing the Chesapeako, unless the balloon was making a different course from that of her first sixteen miles. Consequently another gradual descent through the cloud stratum, which was still very dense. was made, which brought the machine over Conewingo Falls in the Susquehanna River. The rearing noise as it met my ears, while yet in the clouds, gave me some forclosding that I had reached the bay shore, taking the noise of the falls for that of the bay surf. My anxiety was relieved from this, and increased in another quarter; for, in coming through the clouds, the falls were immediately undermenth me, the balloon descending very rapidly, and the opposite side of the river lined with highlands and trees, and it was not until a great quantity of bullast was discharged that the balloon overcame the obstacles. I hailed some individuals living at the falls, who invited use to descend and partake of their hospitality, which, however, the position I was placed in compelled me to decline. Before I made this reconnoissance, the sun was near the horizon above the clouds, and when my vessel got below them I found the earth shrouded in a glosmy twilight. The Chemponke hay some miles to the south, and the direction the halloon was making would carry it along its western border. The large quantity of hallast discharged in crossing the falls, caused the balloon to rise to a great height above the clouds, bringing, as it were, the sun above the horizon also, which but a few minutes before was sinking behind a bank of clouds, and had now become elevated twelve to fifteen degrees. This phenomenon interested me more than it deceived me, but was still the cause of keeping me aloft until it had got dark below, which circumstance cost me my balloon and a most terrific accident.

Seeing now, at even that height that the day god was fast shaling in the clearl horizon, I commerced a gradual electric and horizon relevable the appearation of the clearly the source of the control of

were within my reach. Having accomplished this in a manner sufficient to keep the balloon anchored by the car in case the grapple-iron should slip its hold, I commenced ballooing again, which was immediately answered by a coloured man, as I judged from his dislect. He cried, "Where are you?" I answered, "Here, with a bulloon." He replied, "I know dat." This surprised me, and I cried out, "How do you know it?" He answered, "I smell de balloon." This surprised me still more; but he having in the mean time come up to me, informed me, upon inquiry, that he had helped to fill a balloon at Baltimore the fall previous; and that as soon as I told him I was there with a balloon, he concluded I had come from Baltimore with one, having no doubt of what I told him, because he smelled the hydrogen. Unednested man as he was, I found him one of remarkably quick perceptive faculties, and just such an one as an aeronaut is glad to meet with on his descent. He informed me that I had landed between Belle-Air and Port Deposite, on the plantation of Mr. Stump, in Harford county, Md. By his assistance the balloon was moored near the house of Mr. Stump, when we roused the family, they having retired to hed at an early hour. Here we found plenty of assistance, Mr. Stump giving me a very cordial reception, at the some time ordering his coloured men to render use all the assistance necessary. As it was drizzling, and the grass was wet. I determined to discharge the gas from the upper valve of the balloon, and thus be enabled to fold the whole machine into the ear beneath it, as it gradually collapsed. This process being necessarily slow, and the atmosphere very hamid, it became impregnated with the hydrogen for some distance around the balloon. Being some distance from the house, and having a kantern standing at least fifty feet from the balloon. I apprehended no danger from the escaping gas. Things went on in this way until the balloon was emptied to within a thousand cubic feet of gas, her upper end being now drawn down, and one of the men with his hand pressing open the upper valve, while I was standing at the other end carefully folding the lose silk into the car. While thus engaged, Mr. Stump standing about thirty feet behind me, and some helf-dozen more persons near and round the machine, either the lanters, or some other light which had in the mean time been brought to the scene, ignited the explosive mixed atmosphere that was hovering around the balloon, making a report like a park of artillery, throwing me violently back at least ten feet from the place I was standing setting fire to the clothes of some, and severely scorching the faces and hands of others, and even Mr. Slump did not entirely escape the effects of it, although a considerable distance from the machine.

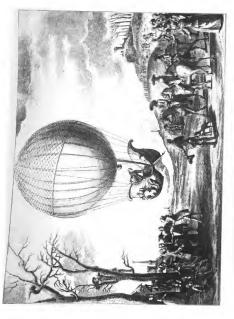
I quickly sprang pron my feet again, and jumped on to the renainder of the balloon which was brarring in the car, and which was than estimated by transpiral it out—the gas that had by the sudden explosions bers liberated from the balloon, in the mean time row rapidly into the air—like a consuming fire," with a real-ing noise, until at a considerable height, it was totally consumed like a dying meterable height, it was totally consumed like a dying meterable height, it was totally consumed like a dying meterable height, it was totally consumed like a dying meterable height, it was totally consumed to

There I stood in deep reveries, scarcely able to realise the events of the last few loars, with feelings like a prepare savelenge from a dream, in which I the magnificence-millinity—shearing-retermen-concisionate of approaching death, that the human mind is expable of conceiving, agisting my thoughts. For, at the mount of of the explosion, the death page fifted throughy a praids. In a few mounter law accounts from a great from the page through the very hard. Shearing a second to the strength of the streng

Medical assistance was obtained, but it was some time before he recovered.

## ASCENTS OF MR. AND MRS. GRAHAM.

1836.—Mr. Graham had commenced experiments in nerostation in 1823, and Mr., Graham in 1824. I cannot find anything very remarkable to record of them during this long period, except the extreme boldness of the latter in ascending frequently alone, and on one occasion with another lady (Mrs. Cheese); but in this year she met with a serious accidant when descending from a high flight with the Duke of Brunswick. This did



not, however, deter her from resuming her experiments. Of one of Mrs. Graham's ascents a poet thus wrote;-

Lo, while sublimely borne upon the gale, Our fate to watchful Providence consignit, O'er the blue other's wide expanse we sail,

And leave for brighter realms the world behind:

2

As, far beyond the glaces of mortal eye,
While gentle naphyre wait our feating car,

We urge our fascless voyage to the sky,
And trace the mystic wonders of the air.

3.
A mighty region all around us grows,
No homan skill may its confines explore:

No human skill may its confines explore; The Pow'r that fram'd, above its limits knows, Where time, and space, and nature are no more.

Here while our silkon sphere servedy glides, The distant earth fades in the awful vast; We gaze admiring o'er the arral tide, And the last vestige of the world in past.

Beneath us far the floating clouds appear In heaps on heaps of misty vapours rell'd, Like distant mountains rising on the six, And all the boundless hornon unfold.

6.

As if Omnipotence had form'd a veil,
When erring man for cot His secred reign;
That might from sight of Heav'n a world concest,
Where oft His bounteons gifts are giv'n in vain.

And as we gaze we own that Power supresse

Who then the realws of air out o agest protects,
Who by His manufacts slid their wooders frame,
And Nature's latent mysteries directs.

No hold presumption new impels our flight,
For while these anysteries we would explore,
Where screen orbitial open on our sight,
We bend in ser'rence, and His name adore

Whose wisdom gave them being, and whose eye, Stall watchink o'er the creatures of His word, Looks down in mercy from His threes on high, And supplied nature owns th' Almighty Look.

Oh, might we still then'this bright region sour'
But this eternal, Providence denies;
Tiess far we non-His will permits no more,
And we relociately fornake the sines.

He still, this much to Graham's hopes is giv'n, No artial tojiages could venture more; And still our fate, the care of fer ring Henv'n, We reach in safety the Jerentrial shore.

This year also Mr. Monek Mason made an ascent from Vauxhall, which is thus described in a letter—

To the English of "The Times."

Delayed ought to applicable to you and your notion for a soon tradiling them upon the same neighet, and more which, from the deprenay wherevish it has been traveled of them, may very recountly be considered an absorbed calculated. The great variety, however, of the supects under which Nature calculates have the new three the mostly of the manner in which even the non-colleanity satures an adaptive of the two level and them to see and a non-fine and superfixed observed to make some ones of examining them, will sat all times how to one even for the most superfixed observed to make some ones more than the superfixed observed to make some office more than the superfixed observed to make some ones more than the superfixed and the superfixed of the substantial evidence in the first third in the proposal of the substantial evidence in the first their deprenade of the englayment of most purposes were not embedded to death of any playend those of the most usual and commonquious description. So manifold, however, are the spectrition of Nature, and no pipele with instruct cent the two insignificant of the works, that for two mounts one ever load to be so greenly all the substantial that manner the substantial evidence in consistence of the proposal way mounts on every load to be used to be superfixed followed to be substantial to the substantial evidence of the proposal product and evenue the reconstition of the proposal product and evenue the reconstition of the product of the product and the substantial evidence in the change of most ordering season.

At twenty-five minutes to four our bulloon and ear, containing nine persons, rose majestically from the ground, and, assuming at the first a south-westerly direction, rapidly traversed the extremity of the firework gallery, innoclaisely and cleely averging over the bouls of the persons who had collected there for the purpose of witnessing, the accurat. As soon, bowever, as she had readed a slight elevation ber accurate power quickly prevailed, and in a few accounts she was involved in the clouds which impended at a slight distance above the surface of the earth.

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Although the day might be contained as generally unforcembe to seconsisted display, yet was it not visition it as deviating, specially to these who persions experience in such screen but there undealed a sixth atmosphere or as metaded sky. The not extent of resport which compiled the earth and ultimately catabled that adopt from our view, if no so point it was calculated to deter them the boardy of our property, by depring and care, or one great and usual norms of administics, in another contributed to the internst and amploty of the some by the norm aparts and within presented the altered flow of nature to our resurse.

Simply had we quitted the earth before the clouds, which had previously curvinug as began in surveys and all sizes and quality to exclude the falsing prospect from one wight. It is assured possible to envery a adopton take of the effect produced by this apparently privide overtraces. Unconscious of our own motion from any direct imprecious proase over meetings, the whole world appeared to be in the set of receining from its into the time when the proper which the reporty certain, the similar phenomena represented on the stage, seemed to conceptute and all should note the brettandi games from more tree. The trees, the buildings, the spectature and their crueded equipages, and finally, the south heeft of their distinctly seen, gradually became observed by the thickening units, and powing white in the identic and souther their entities, soon folds any "like this basical false" of vivine. Thereing us, to all appearance, nationary in the cloud that still continued to travel was in its warry field. It begindes the interest and similar in the links set of two cases, the domain or whole out the melting of the contract of the

Through this dense bely of vapour, which may be said to have commoned at an altitude of about 100 feet, we ware borns promote to perhaps a required indeases, when the increasing light awared so of or approach to its superior limits, and shortly after the sun and we rising together, a second of specimen an anguitence subderly haven topo, care view, which it would be van in to expect to reader indulgible by any mode of description within composer; paraning the Bluskow which the previous events had been no strongly calculated to create, the impression upon our senses was that of entering upon as we would so which we had hilderly been strangen, sail in which not a votige could be previved to remind us of that we had left, except the last finit echo of the vriew which will duffy readed as in 6 and of we made from the substitute lower into which we would be admitted to the surface.

dumly reached us, as it out of some interminance abyse into which they were tast retreating

Above us, not a single cloud appeared to disfigure the clour blue sky, in which the ours on one side, and the mount in he first quester upon the ether, region is unadisturbed reagaility. Because in in every alrection, as far as the eye could trace, and doubtless most further, the whole place of violes was one extended cown of foun, broken into a thousand datasatic forms, it were realling into monathina, then sinking this longitude allows, or exhibiting the appearance of rart while/pole; with most a perfect minerry of the real forms of nature, that, were it not for a periods acquisitation with the general character of the country below as we should frequently have been tempted to assert without besitation the cubictors of monations is loaded penetraling through the clouds and attenting in protected ranges shough the identity real of our observations.

In the centre of this hemisphere, and at an elevation of about 3000 first above the surface of the cleads, occasioned to final in selitory magnificance, attended only at first by our counterpart—a wast sings of the follow itself with all its paraphermalia selicitarity thrown by the sum upon the opposite masses of vapara, until we had risen to high thet even date, cutrace-ling the material basis of its support, at length deserted m; nor did we again corrective it until, respectatory to our final desecut, we also much to a proper elevation to basis of the respectances.

Not be least arithing feature of ours and similar situations in the total absence of all purceptible medies, as well as of the most which in cellulary cones is sere fixed to accompany it. Silence and transplitting sparse to hold equal and underpoted away throughout those airp regions. No nather what may be the convolution to which the strengthen's callegeth, are how visited to take in small and hardon input the agilted ratifies of the earth, the strengthen's callegeth, are how visited to take in small and hardon input to against a first feet of the earth, the strengthen is not considered to the strength of the stre sociou to which the individual is actually subjected. This, however, was a resource of which we were unable to avail ourselves, totally excluded as we were from all view of the earth, or any fixed point connected with it.

One one only once, for a few moments preparatory to our final deword, did we obtain a translatory glisupe of the world located in. Dies approaching the perper serious of the verpout residue, which we have described as extending in every direction seconds, a partial opening in the clouds elicoverse be use for an instant a portine of the sexth appearing or illuly news through a van pictural table, registry moveding behalts we variegated with farmous and interacted with reads remaining in all directions; the whole reduced to a seal of almost prophic instanteness, and from the force yeaper that all illustrating showered it, improving the behalter with the line of a vision of evolutions, which come hintly genins had, for an instant, ensemble to discloss. Samely had we time to search a hart glance over we do planed over the deep and the clouds uniting grandfully consocial if from our view.

After continuing for a short space further, in the vain hope of being again favoured with a similar prospect, the approach of night made it desirable that we should prepare for our return to earth, which we proceeded to accomplish accordingly.

It is in the management of the descent under circumstances similar to those which characterised the present occasion that the utmost skill of the acronaut is principally displayed. The low position of the clouds, resting almost upon the earth itself, precludes the possibility of observing the nature of the ground until it would, without the exercise of the greatest judgment, be impossible to avoid completing the descent, however unfavourable the country might eventually prove for such a purpose. To all this detail, however, Mr. Green proved himself perfectly competent: the balloon gradually descended into the cloudy region below us, and became involved for a minute or two is obscurity ere we perceived ourselves slowly emerging over a large tract of ploughed land particularly well adapted to our design. Scarcely had another minute clapsed before the grapuel reached the ground, on which it continued to drag with some resistance for a short space until it took a firmer hold of the soil; when two gentlemen (one of them Mr. Cumberlege, the elergyman of the neighbouring district), who were riding with some ladies, perceiving our situation, losped from their losses, and with a real which morited our thanks leat their nid to secure the graphel more firmly. More persons shortly after arriving, the balloon was finally brought to the earth, and we effected our landing in a common called Billington Fields, in the parish of Leighton Buzzard, about two miles beyond that town and about forty-eight from the Gardens at Vauxhall; having employed about an hour and three-nuarters in the voyage, nam a nearly uniform course of north-west by north, and at a nearly uniform elevation of about 5000 feet above the level of the sea. м. м.

...

We come next to the flight

FROM LONDON TO WEILBURG IN THE GREAT NASSAU BALLOON.

Mr. M. Mason gives the following account in his 'History of Aerostation' (1837), of the most remarkable trip that has to this day been effected:—

Mr. Bobert Billonda, a gratienas who had long cultivated a practical sequelatones with the art of arrestation, readvolve a died an operaturity for a full display and ansopirous determination of the merits of the display and supplied and the sequence of the control of the cont

<sup>•</sup> It is but justice to the proprietors to state that no potentiary consideration was required for the one of the balleon, which, logether with the accommodation of their premises, was gratuitenely tredered upon the occasion.

the transverse or equateful by donot consists in a few, and properties admitted to be at the same time near consistent with elegance of appearance, and now obsophed to the water and orientensheres destruction. The sills of which it is formed in of the very lost quality, spea, were, and givel expressly for the purpose; the statuse trends of the pose, with our adversaries which and derivately a beast furty-free include, down the control remained or the control of the pose of any rare or damage which might acclearably exerced. The height of this exercises we be a posential of any for a few damage which might acclearably exerced. The height of this exercises we had a posential of any for the pose of the pose of the pose of the posential or the pose of the posential or the pose of the posential or the posential or in order to be a possible of constaining rather more than 8.500 ceals for of pass, and mother ordinary derivantances in computed with the possible of t

The me which appreciates to this ballock is in precyc bequiping with its glossatic mate. It is engoused of wither word, in the form of an ceal, about these for in length, and form in breadth. It is engoted by the respect to a hoop of all for its first. He is engoted by the report to a hoop of all for its first in diameter, and in thickness a like analyser of these, formed of two circles of such case within the other, feedily but by stora, and retained in their position was with an strengthened by a triple for of early which is conduced between them. At either end of the our are two mate, fully equalled of normalizing the promone early, which some lit in the middle, and somewhat incide, it extended a bench about a for in width, which between the contract of the contract of

The appearance which the hallon exhibited previous to the securit was, in trads, no low interesting than strange. Provisions, which had been collected for a fermight's consumption in cose of energy to; billes to the amount of payers for its no investigat, disposed in haps of different size, thely registered and marks, begades with a numaral apply of corban, implacents, and other accounters to an arried arrains, excepted the bettern of the annual and annual apply of corban, implacents, and other accounters to a north carrains, excepted the bettern of the trampets, homesters, belonges, hamp, who jan, and spirit finker, with anny other articles designed to serve the purpose of a veryone to page where, one frequents, unaligne cold it again supplied.

Amongs the various contrivance which the postlar dynamizance of the case had led us to holy two a machine for examing often and other ligans, in which the hast developed in the proces of shifting quickline was under to expressly the sevening of sexual fiers. This machine was found to amove the purpose prefetchy well, although the dangers which it was interfed to obtain an envelop are take, at to register the Add of similar processions. With this dayers of problems and the major part and not be required to the other processions. It is also the procession of the processor processing of the contribution of the contributio

even temporarily to desire its extinction.

To provide against the inconveniences which we might have experienced subsequent to our descent in continuing our journey through a feeding contrary, we likewise took the pressuation to farmish converleves the passports directed to all parts of the Continent, specifying the peculiar nature of our voyage, and entitling us to examation from the usual formalities of office.

Finally, we were also charged with a letter to His Majesty the King of Holland, from Mr. May, His Majesty's

Consul-General in London, which letter was put into the post-office at Coblentz on the evening of the day succeeding our departure.\*

These prepared, and delay assumed, at laff part on whether has balloon was dimined from the ground, and triting partly under the inflations of a substitute brane been people by query travard the notion traversity in the course the cultivated phasis of North, and passing in necessions marry over the terms of Ethion, Etwaday, Fosterray, and others, where variegied entities be scalarliky diversited the risk backedup that by backedus. The works was unaccountly like for the time of year, a for high tends also finished in the day, and at boat as useful extra the second of the contract of t

Containing in a cortice-orderly direction at furty-sight minutes part twof we crossed the Medway, at the distance of about the miles to the word of the following and in little more than an lower step years in sight of the origination of the strength of the strength of Charlestry, the fully severe of the market all instances and the region of the market and instances of the super and inhabitation of that strength market when participation over otherwise all instances or the strength and twice before market we observed a small parachetic containing a letter addressed to the mayor, and conclude in such terms as our luxuries.

In a few minutes after | we obtained our first view of the wa, brightening under the last rays of a setting sun, and occupying the autrene verge of the horizon, in the direction in which we were now rapidly advancing.

During the latter period of this part of are rouges the latton, perhaps owing to the condensation constant. by the approaching bands of strating, had been greathed jimilishing her allithins, and it for some time part had continued so near the earth as to perait se, without much exertise, to carry on a convenzion with each of the inhabitants at lappened to be in our insteadist visiting. So show, indeed, were we are one into as to be while indistingly to beneves a covey of participes, which either our approach or some other quality through greaters in had indistingly to beneves a covey of participes, which either our approach or some other quality through a primary. A white of the contraction of the contraction of the participes of the participes of the contraction of the mixture of the contraction of the participation and the contraction of the participation and the participation of the substituting transfers to a visibly triping the practicion of the mixture participation and the participation of the participation and the participation of the participation and the participation of the participation and t

Perhaps there is no effection conceivable from which the heards of netters are seen to guster obstacle; or with more singular elected than that wherein the specture is placed, when sauded in a Mallor, he layers of with more singular elected that the search is spectured, when sauded is a Mallor, he layers of presentations to be brought into observage experimentation with the search beauth. The increased distinctions of the different clayers, the next apert came of the search position compiled by the behalts, and above all the enguisin motion which, however unbineinguidable from in-absolute effects upon the press, calculate to the cythe to ever-regist, charact of right light, as all disciplinations about the search of the search blands of the contradiction of the contradiction of the search of the search

Lonios, Surenier 25, 1876.

J. W. Max.

Of the due arrival of this letter, and His Majorty's gracious reception of it, we received the following testimony in a letter from Mr. May, shortly after we reached Paris:—

Wreviting from the accounts in the sevenpages that year and you friends laws artisted at Eule, I be seen time In lawing the authorities of thusking year very simmerly for the case islands of the interfect in data the livery of Methoding to such balance, for the year for the case is the contract of the

your enterprise, and wunde with great re Your most obedient, humble servant,

<sup>\*</sup> The registry of the times and distances, as also of the direction of our course by the compans, thring the vergat, was the particular powrince of Mr. Edikord, to whose Journal the author is indebted for all information on those points, as well are for many more almable observations, which will be found intersperved the registration.

valuable observations, which will be found interspersed throughout the following narrative. Fireminates past four. § Of the disc receipt of this letter, as well as of one to the man

effect, which we subsequently addressed to the Mayor of Dorer, we have since been infertured; though the others, which we discharged by similar means at different periods of our royany, we have reason to believe never reached the hands for which they were discovered.

<sup>|</sup> Fifteen minutes past four.

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offerince of plasaums as of surprise—of red critical shrights and that are of gratification which is induced to sender and attainations for its proiptial effect. This concludes I have been chelled jed by a consideration of the sysleastified appearance which the country presented, as under the influence of a gradual depression we slowly specified the grant, and for some time contained to this indepties the surface of the high electrical of a feaburdered feet. The various objects, which, seen from on high, appeared like mission representations of an islad words, now gradually developed themselves, and assumed the channets and speed or fruitly. The forest as parks, no longer an indefinite mass of smerting green, opened at our appends, reputiling it in idelicitation trees, the heave and branches of which remembrance of critical exactly, believe assertly approaches, now as he ispan to take play the contract of the contraction of critical exactly, believe assertly approaches, now as he ispan to take play themselves of the critical exactly to the searchy approaches, now as he ispan to take play the contract of the critical exactly, believe assertly approaches, now as he ispan to take play the contract of the critical exactly, believe assertly approaches, now as he ispan to take play the critical exactly approaches to the contraction of critical exactly, believe assertly approaches, now as he is part of the play the contract of the critical exactly and the contraction of the critical exactly approaches to one of the contract of the contraction of the critical exactly approaches to one of the contract of the

About this time the first opportunity occurred of showing how far it is possible for the skilful and experienced seronant to influence the course of his serial vessel by availing himself of the advantages which circumstances frequently place at his disposal. Shortly after we had lost sight of the city of Canterbury a considerable deviation appeared to have taken place in the direction of our routs. Instead of pursuing our former line of south by east, which was that of the upper current, by means of which we had hitherto advanced, it became apparent that we were now rapidly bearing away upon one which tended considerably to the northward, and which, had we continued to remain within the limits of its influence, would have shortly brought us to see in the direction of the North Foreland. As it had all along been an object to proceed as near to Paris as circumstances would permit,\* we resolved to recover as soon as possible the advantages which a superior current had hithorto afforded as; and accordingly rose to resume a station upon our previous level. Nothing could exceed the beauty of this manustrere, or the success with which the balloon acknowledged the influence of her former associate. Scarcely had the superfluous burden been discharged proportioned to the effect required, when slowly she arose, and sweening majestically round the horizon, obedient to the double impulse of her increasing elevation and the gradual change of current, brought us successively in sight of all those objects which we had shortly before left retiring behind us, and in a few minutes placed us almost vertically over the Castle of Dover, in the exact line for crossing the straits between that town and Calais, where it is confined within its narrowest limits.

Up to the present mounts making had appeared ackelated to confer particular distinction upon or enterprise, not a seakur the inspression that when when the differed in any report from the usual desof each centralise. The case, however, was now abordy to be changed, a new and married channes to about to whenever we might fool instilled the sain to prose to terminate our wrapp by downed; (within given and a new of security to all eventwises ever hard) was about to yield to the conviction that, no matter how argued the down, how imperious the receipt, that expedient would in future be widthed from a until it had placed. Providence to covery in a lower proposal, and afind to uncere and the first providence of a soll resting these. When or when that of the many channes peculiar to car situation, that it was, and must for an entire the contralistic complete incurring the contralistic contralistic contralistic complete incurring the contralistic contralisti

It was forty-eight minutes past four when the first line of waves breaking on the beach appeared beneath us,

<sup>•</sup> The proprietors of the balloon having contemplated making an electric from Paris, and 3b: Helloud having undertaken to transfer the balloon lithlate, it because a consideration with ms not to increase our distance from that expedit nore than was consistent with the main object of the expedition.

<sup>†</sup> To the circumstances of this transaction, the apparent relateds of our course by the circumsuscess of the restit, the length of tion, the mean rate of our course, up to the time we consequently remarked in sight, and, above oil, the relationship to those than twenty-frie miles on the significant of the significant

a: Here direction of our approach, is undoubtedly to be attributed the of observation contained in the newspapers, that the progress of the balloon did not exceed the rate of four or five miles an Lear-a at assertion which a slight renderation of the time we had left Leston, and the distance we had accomplished, would have been sufficient to dispress. According to the above method of relating-tion, the mean rate of our course, up to the time referred it, was

and we might be said to have fairly quitted the shores of our native soil, and entered upon the hitherto dreaded regions of the sea.

It would be impossible not to have been struck with the grandour of the prospect at this particular moment of our voyage; the more especially as the approaching shades of night rendered it a matter of certainty that it would be the last in which earth would form a prominent feature that we might expect to enjoy for a considerable lapse of time. Behind us, the whole line of English coast, its white cliffs melting into obscurity, appeared sparkling with the scattered lights, which every moment augmented, and among which the lighthouse of Dover formed a conspicuous feature, and for a long time served as a bencon wherewith to calculate the direction of our course. On either side below as the interminable ocean spread its complicated tissue of waves without interruption or cartailment, except what arose from the impending darkness and the limited extent of our own perceptions. Slightly agitated by a wind unfelt by us, its plient surface glistened faintly as it rose and fell, entching for an instant by the momentary obliquity of its parts the few rays of light that still lingered above the horizon, and losing them again as they turned their opposing outlines towards a darker quarter. On the opposite side a dense barrier of clouds rising from the ocean like a solid wall, fantastically surmounted, throughout its whole length, with a gigantic representation of purspets and turrets, batteries and bastions, and other features of mural fortification, appeared as if designed to bar our further progress, and completely obstructed all view of the shores towards which we were now rapidly drawing nigh. Upon the glittering plain which thus lay stretched before us a few straggling vessels, some of which had already begun to mount their lights, alone appeared, issuing from beneath the dark mantle of clouds that rested, as it were, upon the very bosom of the deep. In a few minutes after, we had entered within its dusky limits," and for a while became involved in the double obscurity of the surrounding vapours and of the gradual approach of night. Not a sound now reached our cars; the heating of the waves upon the British shows had already died away in silence, and from the ordinary effects of terrestrial agitation our present resition had effectually excluded us.

I sarriely know whether it is an observation worthy of leving connaisted to paper, but the son, milose perlays maker circumstances of the most extraoellingar quintion, does not in level appear to the subjects small. Unopposed by any material obstacle, an avail a cilliness sevens to reign over its motions. Not of think that even made as quiesmatences, no matter how wholes, can as quasibable illustrates us sire from the condition of its own popsing members. The impossibility of ever leaving been placed in a situation to bring this first mader the engainment of our areas, into modulat the reason sky it has never below near networt. On the shown or in this on, no one he ever been present in depochasic of that startful support, the absence of which is recovery to the other leaves the contribution of the contribution of

According as we proveded, the lower strate of the vapoury led in which we noted would adopt appear to disalve, and, apaged leasenth as constantly reveal a partial plinnes of the an-are equility plenting to assume the salts livery of night. Across the field of view which thus become express a silinay slap night now and then be seen to pass extering, on one side like the spectral propersistation in some gard planter, and, having a position of the salt that the salt of the silinness of the salt of the salt planter, and having a reason more reveryed in the salt which of the reveniting reason were specific now and what sing me one more reveryed in the salt which of the reveniting reason were severy from our view. Marking me one more reveryed in the salt which of the reveniting reason were

In this situation we prepared to awill ourselves of those contrinuous, the merits of which, as I have already stated, it was use of the least objects of our expedition to accretain; and consequently, to provide against increase of weight proceeding from the lumility of the atmosphere, naturally to be expected on the approach of night, we commenced lowering the guide-rope, with the floating ballast attached, which we had provided for the creasion.

Scarcely, however, had we completed our design, and were patiently awaiting the depression we had anticipated, ere the faint sound of the waves besting against the shore again returned upon our errs, and awakened

Now dark and deep the night begins to fall, A shole instructor, sink in the querching gloon; Magnifectual and was are borste and card; Order confounded lies, all boundy void; Distinction look, and gay variety One nativersal host; such the fair grows of high to kindle unit creat the whole—Thousand.

or attention. The first improved which this event was calculated to coarry was that the wink had changed, and that we were in the act of returning to the shown we host a short plots a handowd. A glauno or em, lowers, severed to show us the faller of this improvince; the well-known fight for Claim and of the neighboring shows were already giffering beatests, as the bearing of the objections fight for the contraction of the simple production of

It was exactly diffy minutes past five which we had thoroughly completed this regis, the point at which we first remode the Provide shows bearing distinct about row under the new newtonal of the small holy of the lighted Chalic, our altitude at the time being nanowhat short 2000 feet above the level of the cona. As it was now perfectly dark to wherevil a lineally highly at the end of a long only, in order to signify our presence to the inhabitants before, downly independent of the control of the

Before dismissing the sea, a word or two seems required to counteract a vague and incorrect impression regarding its peculiar influence upon the buoyancy of the balloon, arising from the difficulties experienced by Mossra Blanchard and Jeffrics in their passage of the same straits in the year 1785, and the apparently unaccountable removal of these difficulties as soon as they had reached the opposite coast. So many, however, are the circumstances within the range of aeronantical experience to which, without intruding upon the marvellous or calling new affinities into existence, these effects can be satisfactorily attributed, that the actual difficulty lies in ascertaining to which of them they are most likely to have owed their origin. Of these the increase of weight by the deposition of humidity on the surface of the balloon, occasioned by the colder atmosphere through which the first part of their journey had to be pursued, and the subsequent evaporation of the same by the rise of temperature to which they necessarily became subjected as soon as they came within the calorific infinence of the land, is in itself quite sufficient to explain the difference that existed in the buoyancy of the balloon during the different stages of its progress. Even in the absence of any humidity whereby the actual weight of the balloon could have been increased, the mere diminution of temperature, by condensing its gaseous contents, and their subsequent rarefaction by the altered temperature they were sure to encounter when they reached the opposite coast, is more than enough to account for even much greater effects than those to which it is here intended to apply. As far as we were concerned, certainly up such uncommon impression was observable, nor did we experience any diminution of ascensive power in our transit across the sea beyond what we should have expected under similar circumstances over a similar extent of land.

Having thus completed what may be remed the first stage is not recentful voyage, we at about making each preparation as the abund ericumstances of the one remedent deviable. For this propose the expert works which had been intended to be used at as if required, but which our rapid passage over that element but for the experiment of excenting over a pairs in each of whitehow, and a submit guidence of about a thousand for it is sharp, which, however, we midter anticipated for experienced, it could be becomed instantly to a considerable eliments from the ext. These arrangements being over, almost depression of the experiment of the end of the experiment o

\* Beyond the risk attendant agent the use of fire under orbitary currentsations, there is but not settedion peculiar to accordant in their say particular designs in the upper benefits of the properties of the setter of the

cont, to such a distance from the our as to place it beyond the reach of the gas sating from the nevel of the ballons. If it domaind be the first the such as the such as the such as the compatibility can decidal be hard to six as by degrees, so it did a new; a the ballons, being at each momenta always in the act of riving, would subscrip cater in an emanagence of gas these reached secured it, which, if sufficiently improgranted, would ignite and most probably occasion the dotrogation of the machine. and a few shariture of wine and other liquous, femred the base of a reput which night in truth have proved acceptable to use of more relativise packets on ours, especially requested at very wore by the rigorous discipline of a twice bears fast, and a proportionals amount of builty carefus. Associately, with usany a jab, touching our boundary of the control built to the memory of these when we had be fin inscretainty behind as. With an control, the control built to the memory of these when we had be fin inscretainty behind as. With an control, the control built to the control of the co

The night having now completely closed in, and no prospect of any assistance from the moon to facilitate our researches, it was only by means of the lights which, dither singly or in masses, appeared spreading in every direction, that we could hope to take any account of the nature of the country we were traversing, or form any opinion of the towns or villages which were continually becoming subjected to our view.

The scene find! was one which exceeds description. The whole plane of the earth's surfece for many and many a longes around, as for and further has the eye distinctly could colorison, seemed administration from the next tree of text of a watchful population, and cultilated a starry specials below that almost rivialled in brilliancy the motior latest of the concere firmated above. Incommitty, during the artist pre-time of the night, each require and the register of light, signifying the prosecse of some none extensive examinately, weed appear put louring above the distant bettern in the direction between weed to the surface of the distant between the distant bettern in the direction between weed or the surface of the

It would be very difficult, if not impossible, no every no the mixeds of the uninitized any seleptuse base of the significant selection of the contractive of the con

In this manner, and under the influence of these scalinearts, did we traverse with rapid strikes a large said interstufing pertins of the European continent, embracing within our borizon an immeass succession of towns and willages, whereaf these which occurred during the earlier part of the night the presence of their artificial illumination is once enabled us to distinguish.

Among those latter, one in particular, both from its own superior attractions, the length of time its continued within our view, and the uninterrupted prospect which our position directly lower it candled as to command, captivated our attention, and elicited constant expressions of admiration and surprise. Situated in the control of a district which actually appeared to blace with the innumerable first wherewith it was studied in every direction to the full extent of all our widthle brains, it sewerts to direct in itself, and at one glaces, on episoms of all those

<sup>•</sup> For the brack of each lowers of good where as may in future be bettle," however annuals on it is tempted to prove the pleasures of eventation, it may be as well to industry that it is not all liquors that one he conveniently employed upon such accessions. Characteristics, and a second control of the convenient o

bottle," however azonadom it may appear, are by no means adapted for aerial excansions: their natural toodeney to sping being so much necessarily the distinished pressure which is the consequence of their elevation, that they invariably shy of altopether almost as some methods between the consequence of their elevations.

chains which we had previously been observing in detail. The perfect correctness with which every line of strees as narried out by its particular line of first; the forms and positions of the more important features of the city, the theatres and aquares, the narriets, and public buildings, industed by the presence of the larger and more irregular accumulation of lights, added to the faint numerar of a lowy population still actively engaged in the promise of sheaver or the avareation of gian, all theorether combined to form a neiture which for incardative and



NIGHT VOYAGE TO NAMED

effect ortainly could never have been conceived. This was the city of Liege, remarkable from the extensive inconwarks which, abounding in its neighbourhood, to excessioned, the predict appearance already described, and at the time led to that conjecture concerning its identity, the truth of which a subsequent inquiry enabled us to confirm.

Almost immediately after we had passed the main budy of the building, and bofies we had get quite them of the outsteen for between, as excited relevant on the one of our machine for beating offeet, just at the time, too, when, from the increasing rigars of the night, its services were likely to prove most particularly acceptable. Previous for our arrival in the neighborshood of or extensive an essemblage of buildings, we had thought is atriable to suspend the action of the guide-tops, by recoving to such an electation as would disadve its connaction with the extent and caver it date of the bounce. In this names we are dot record the circum all were about to come on the

It is they assumed by a character that, having now submitted to include the part of the goals deeper as it when the original materiangs the orient to the goals deeper as the rich the original contribution of the part of th

and me classes of its recurrence in the least peabable. The clair depict value is now find in its continuous case thereither than all depict value the result for this case the relative rimal and explorate value of the result of the result

solution, when a slight involvent to depression made it normany to discharge a small quantity of bullet in order to ministric our electron until two has investion and to a place where we could case more conveniently remone these of the guide-teps. For this propose, Mr. Green, being distincts to employ the lines which had almost been used in the receiver of the madeline, repressively to in these gardenin and activing with that intent specual to cert the receiver of the madeline, repressively to in these gardenin and being with the lines which had not seen that the second of the second of the second of the lines which was intended to employ it and of which we had a considerable stock, because of no we recept for the purposes of bullets. In which record we were subsequently got to cover tit. To dispose of the hard in which it had been contained was subject of more serious consideration, its size and wight rendering it rather a designence expectate to get or did of the the ordinary was redd of indexage. This fillies had, because construction to execute the particular of the second of the second

Having now cleared the town, and once more antered upon the fiery district in which it was embosomed, we again resumed the two of the guido-rope, which, as I have just said, on our approach to so considerable a community we had been temporarily induced to suspend. This operation brought us once more to a nearer contact with the earth, and enabled us clearly to distinguish the voices of many persons whom, notwithstanding the lateness of the hour, we conjectured to be still at work, or else congregated in the neighbourhood of some of the numerous manufactories which illuminated the subjecent country. Desirens to attract their attention, and to enjoy, in idea at least, the surprise with which so novel an apparition was well calculated to inspire them, we lighted and lowered a Bengal light nearly over their heads, at the same time addressing a few words to them through the speakingtrumpet, alternately in the French and German languages, one or other of which we thought it most probable they would understand. The effect produced upon them by such an unwanted occurrence was ne doubt extreme, as we could readily perceive by the confusion which appeared to reign among them, the hurried tene and elevated expressions which immediately succeeded this unexpected declaration of our presence. What they thought of us, however, we had no means exactly to determine; that they were dismayed and perplexed to a considerable degree is neither to be doubted nor wondered at; for in fact, such an appearance, and at such a juncture of time, place, and circumstances, might have struck terror inte bolder hearts and wiser heads than those of the honest artisans who formed our audience upon this occasion. Catching alone the rays of light that proceeded from the artificial firework that was suspended close beneath us, the balloon, the only part of the machine visible to them, presented the aspect of a hoge ball of fire, slewly and steadily traversing the sky, at such a distance as to preclude the possibility of its being mistaken for any of the ordinary productions of nature, a suspicion which, even if it had existed, the terms and tone of our address must speedily have tended to effice. We did not, however, long remain to enjoy their confusion; a consideration of our ewn convenience more than of theirs inducing us to give them rather a sudden congé. Amongst the other sounds which issued from this Cyclopean region were some which betokening the presence of a steam-engine at work immediately before us, suggested the propriety of raising ouncives to such a height as to place the guide-rope beyond the chance of becoming entangled in some of the machinery. To add therefore to their confusion, while lost in astonishment and drawn together by their mutual fears they stood no doubt looking up to the object of their terrors, a large shower of sand came tumbling down upon their heads, and the tail of the guide-rope at the same mement passing right in the midst of them could not fail to raise their perplexity to the highest pitch. Shortly after, the light expiring, we were lost to their view in the darkness of the sky and the increasing elevation of our ascent. This was the last spectacle of the kind which we were at present destined to enjoy. Scarcely had we passed the confines of the fiery region that had been the scene of our late exploit ere an unbroken obscurity, more profound than any we had yet experienced, involved us in its folds, and effectually excluded every terrestrial object from our view.

It was now past midnight, and the world and its inhabitants had finally committed demarkes to repose. Every light was estinguished, and every sound handed into release; even the chertal times or the vigitant worlddeg, which had frequently contributed to calleve our course during the previous portion of the hight, had now read- and darkness and framenfiller rejector paramount over the whole adjacent surface of the globe.

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Above the mist, above the cloud, Above the darkness and the thunder, White steems are entring wild and load, Calm shince a world of Awa and Wender, And there is allense e'er the thunder.—Horonov.

From this period of our verying until the descring of the following day the record of our advantures become tingual with the observing of night. The flow of matters completely excluded from our view, except when the contractions of the contraction of the contr

Nothing, in fact, could exceed the density of night which prevailed during this particular proid of the vegacs. Yet as single-dept of trevertial nature could asysteme be distinguished, as untiltheasile along a "durkness visible" award to encompose us on every side, and as we looked forward late its black obscurity in the direction in which we were proceeding to could accurally worth the impression that we were distring our sey through as interminable mass of black marble in which we were suchedule, and which, abid is for include technologies. See the side of the s

to melt their way onward by means of the heat which they generated in their conrse.

Independent of the and obscuring of the night, a conductation of two circusstances, precline to our situation, constrained no consists the act reasonillary allowsome of activeness which we have been for high strainghol to obscuring in the first place, the total absence of all nesteroid algorites marked or effective, the centre of type of guide burghest appears in the constraint of the forest-point and analysis of the constraint of the forest-point and the constraint of the forest-point and the constraint of the

It was now that the advantages of the guide-rope began to make themselves particularly appreciable, in the initiations is stillard of the changes that two continually correcting in the short of the objects on digricing infallable swraining of our approach to ground, the superior develation of which might deterwise have consistend an considerable inconvenience. The sain as extent of diffuse advantages at the special continuation of the interaction column would manifest a change of several thousand feet in the lovel diffusers in the advantage of the contribution of the interaction of the contribution of the interaction of the contribution o

 One sun by day, by night ten thousand shine And light in deep into the Deity?
 How boundless in magnificence and might?
 Oh, what a confluence of otherend fireo
 From uma unsurber?d, down the steep of heaven
 Streams to a point, and centre in my night!—Yowe.

2 To prevent infecuentization, the resider is requested to observe that the expression here need does not of incremity inply that any change last taken place in the level of the hatbon's course to occasion its council interference with the earth—the changes whereby such a result became possible being multiply staticalisable to the

inter. And yet the planes is preferly correct, insumeds as the order by which it may device was interest in the frame, which in the course of its covarial progress because sensible of these changes, and all distribute production, arrived to consight with the sentere of the certific function of the contraction of the level of which it was proceeding. I have been indicated to series that the epiphastic propared and the contraction of the contraction of the contraction of the shortly level of the contraction of the contraction of the other contraction of the contraction of the contraction of the other contraction of the production of the contraction of the production of the contraction of

nature of the country which lay beneath us. At these times we appeared to be traversing large tracts of country partially covered with snow, diversified with forests, and intersected occasionally with rivers, of which the Meune in the earlier part of the night, and the Rhine towards the conclusion, constituted, as we afterwards learned, the principal objects both of our admiration and of our conjectures. Nothing could be more interesting than the glimpses which these mysterious approximations would occasionally permit us to enjoy. Slewly descending, as it seemed to us, from a region where darkness formed the only subject of our contemplations, at first some faint hallucination (but whether of earth or air we could but doubtfully determine), would appear invading the obscurity of the sable vault immediately beneath us, and giving us the first notification of our approach to something that owned a form and acknowledged the laws of the material world. Gradually, as we drew nigh, these mysterious appearances would insensibly extend themselves in apace, strengthening in their outlines, and becoming more definite in their form, with an effect which, to render it more intelligible, we can only compare to that produced while looking through a telescope during the process of its adjustment, the confused and shadowy features of some distant prospect are made to pass slowly through every gradation of distinctness ere the proper focus be at length obtained. Along this indefinite plain, maintained in our level by the agency of our faithful regulator, the guide-rope, we would continue to glide for a considerable time, until some equally unexpected depression in the surface of the earth would gradually abstract it from our viow, and slowly reversing all the impressions we had before experienced in our approach, once more consign us to the opaque obscurity that reigned throughout the upper regions of the air.

An instance of the extraordinary conclusions to which the vague and indistinct nature of these representations would occasionally lead us will serve to give some idea of the doubt and uncertainty that, even at the best, provailed over all our elservations and conjectures during this most interesting portion of our voyage. For some time back our attention had been particularly directed to an appearance which, in the absence of any grounds for gaspecting the contrary, we very naturally concluded to proceed from some object or other on the surface of the earth below. Seen through the thick gloom of the night, and extended alone in the black space that wrapped every other object from our view, it bore the aspect of a long narrow avenue of feeble light, starting off in a straight line towards the horizon, from some point or source at some distance underneath us. What it could be, we fruitlessly endeavoured to determine. For a river, its extresso length and regularity united forbid us to assume it; while the dimensions it must have had to enable it to present so important an appearance at the elevation we then occupied. equally precluded the possibility of its being either a canal or a road, the only other objects to which we could with any degree of probability refer it. In vain we looked forward out of the car into the deep intensity of the surrounding night, concentrating all our powers of vision to the one spot, that we might catch some clearer view to determine our conjectures; in vain we racked our imagination, in the absence of the requisite visual testimony, to devise what it could be, that, amid such unbroken obscurity, contrived to make itself alone distinguishable. The more we looked, the more we doubted; the more we reflected, the more uncertain appeared the result of our speculations; nor was it till after a considerable lapse of time, induced by observing its long-continued presence in the same position, that we became finally aware that it was only one of the stay-roses attached to the summit of the balloon, which hanging down along the outside at a distance of five-and-twenty feet from the car, and being, in fact, the only material object within our ken, had partially caught the rays of light from our lamp, and returned them to us under the aspect and impression we have above endeavoured to describe.

In the midst of this intense obscurity an incident occurred which, for the effect it is calculated to produce upon the minds of those who experience it for the first time, and in ignorance of its cause, merits particularly to be noticed.

It was about half-past three in the morning, when the balloon, having gained a sudden accomion of power.

• Two long ceeds of moderate dimensions, externally attached to the frame of the upper three, and used to strong the profit of the balloon during the inflation, as well as after the decent, during the process of emptying the gas, to prevent her frem retiling on the ground. These repse when the balloon is fell, will extend to some fact below the cut, and of a distance of half the dismester of the sphere on extern side of the medium.

aphere on extrar are or un research.

If any one will colleavour to imagine himself looking partly
forward and partly deanward from the summin of a lofty lower,
when the obscurity of night is at its lightest, and beholding a line
ratially illuminated of the real dimensions of which he is ignorant,

vertically suspensed at a distance of owner parks before him, he will be able to form a prefly correct estimate of the relevantances under precision of the parks of the relevant of the relevantances and prepared to the parks of the real distance and position of the object server, the question of the real distance and position of the object and the parks of the real distance and position of the object of the parks of the precision of the real distance and position of the object was included to fort the appearance afforded by a servical type a few fact off, the precision of which d did not assistey, the total of own-object on the horizontal places of the earth whost of two conowing to a discharge of ballest, which had taken place a few inintest before, while navigating to near the earth is be entitleded perfectly and in a contray with the main features of which we were soldly measuranted, began to rise with considerable repidity, and ere we had taken the entomary means to check her ascent, had alrandy attained an elevation of presends of trevels themsel feet. At this somesat, while all greated features and eithless most preferred, as unassent explaines issues from the machine slowe, followed instantaneously, by a victor varieties of the sile, and all the digne which may be reported to concuracy with hereing of the ballows, in a region where so design but in size the preferred to each a constraint of the same intentant, the case in the individual distriction in table, the commission of the same intentant, the case in the individual distriction in the hadron of the contraints, as compared by a recurrence of the same assuming effects, leaving not a designate of the contraints of

The occurrence of this phenomenon, however strange it may appear, is, nevertheless, susceptible of the simplest solution, and consists in the tendency to expansion from removal of pressure which the balloon experiences in rising from a low to a higher position in the atmosphere, and the resistance to this expansion occasioned by the tenecious adhesion of the silk in the folds which the comparatively collapsed state of the ballon had previously allowed it to assume. When the ascent and consequent expansion take place slowly, sufficient time is given to the included gas gradually to overcome this resistance, and the balloon is enabled to accommodate itself to the growing dilatation of its contents during the progress of its elevation. When, however, on the other hand, as in the case especially before us, the rapidity of the ascent is such as to anticipate the gradual adaptation of the balloon to the expansive tendency of its contents, the entire extrication of the folds of the silk will not take place until the internal pressure of the included gas has reached a considerable amount, when suddenly that extrication is accomplished, attended by those effects which we have already attempted to describe. The impression of the descent of the car in the above description is evidently a false one-on the contrary, clovated by the Londontonian curtailment of the balloon in the sudden recovery of its pristine form and breakly, the our, so far from sinking, actually springs up; it is the unexpectedness of such a movement, and its apparent inconsistency with the laws of gravitation, that occasions the delusion, the reality of which the collateral circumstances essentially tend to confirm,\*

The odd, pericularly during this part of the night, was indoubtedly intense, as could be precived not be found to be findames of the thermosetic energing variously from which as for degrees believe to the paint of completion) than from the effects which it produced upon the different liquous wherevirth we were provided. The water, codes, and, of course, the ill in our several vessels were completely frome; and, if was only by the actual application of the heat of the hung that we were analled to precurse a sufficiency of the latter to emply our wants during the long term of durinous to which we were about to be nablesed.

Of the advantages which in these circumstaness we had expected to reap from the use of our machine featuring liquous, we had, at a lave before observed, bour for some time deprived by the bose of a nont material part of the apparatus. In this diffusion we had tried several shifts for supplying the deficiency, but informatively without effort. Anthomologing therefore, the attempt, we at first become reduced to the disapproached interactive of striking our office in a state aboust approaching to congletion, and finally, as it became more thoroughly frozen. Good summittees completed to relimptable the we of it sluggether.

Strange, however, as it may appear, while all around how such unequiveous lestimony to the severity of the cold, the effects produced upon our persons, undeferred as a they were by any extraordinary prematures, were no means commensurate to the cause, nor such as even under ordinary circumstances we might fairly have expected to executive.

The reason to which may be attributed this unusual exemption from the consequences of a low temperature,

In the farmer editions of this marrative I had attributed the detection of the silk in the corrugated (#: form eatherly in the agency of the foot upon the network of the fallione, previously substantial with moisture during the protracted sejament at a lower elevation. Having, however, since bestude from Mr. Green that he has depended properties and the silks offices from a topid accent without the intervention.

of such a cense, I am glod to have the opportunity of generalizing the explanation I had given of the above phenomenon, and of neighing to the float, in the case allocate, its grouper place as morely contributing to enhance the effect by the abbilitional resistance it offered to the gendral distinction of the hallocate.



Then compay and set to the lower Sweet War Southampton under the superintendence of East Williams hours E.E. fell North Agrees R.E. F.R.S.S. Director

is the absence of all current of air,—the natural result of our situation and one of the peculiar characteristics of serial navigation.

That such a circumstance is fully adequate to the result accribed to it, ample testimony is afforded in the accounts recently given to the public of the transaction of the gray pale are ariginare. Papicais lavery, lavel, and other, in promit of the elicovery of the north-workern pumps, wherein many instances are related of person-more risidance contensations are conflicted, but core appling, an architect of instances are whether the testing the transactions are deposited from the size of the contensation and the degrees to which the insums frame in explained by the procession of the contensation and the contensation the contensation and

As the sight daw on is a close the appearance of the franzaous because religiond to a gradual change. The star, incensibly assuming a near sension limit, to party plot designs to rejo the time fectual flow, which their light, which, board as it were by the preculing closerity, but libraries appeared associated and confined, constitutely of minimize the property of the signal of

From out of this mass of requires more than once obtaing the night or care had been consider with considerage strongs a remailment to the resulting or strong a remailment when the relating of the waves reported as most extensive like of once, that it required all our power of reasoning ability by the certain browbelge we had of the direction we were parrounding to be required as the contribution that we were approximate properties of these and transported by the winds, were often thereone had been provided as the wave limits of the Builds.

It would be endlow to cumments all the outjecture to which this phenomenon gover rise, or the various manners by which we endowards to explain its ourserness. Among them thow which second to obtain the guaranter credit were that the seconds preceded from some war form significant by the winds; some rapid river ranking impractative years a laborat and precipitative distanct is endingly that the minty report banderiles, by the ranking impractative years a laborat and precipitative distanct is endingly, that the minty report banderiles, by the beautit, had consistend the nurman, which, multiplied theregions as large a spon, come to our own in the entitude accuse to which we have above alleged.

According to the day favor wigh these appearances vanished, with much of the doubt to which they had given rise. Instead of the unbodes coulied of the sea, as irregular section of cultivated country tegals forly to display fuelf, in the saltest of which the majestic river we had noticed for some time both appeared divining the proposed, and basing itself in opposite directions and the waspens that still study to the seamule of the halfs, or sattled in the valleys that they between them. Across this river we now directed our course, and shortly after local girls of it entitly behind the goalty evering memories by which it was believed not but sides.

The dawn, which for some time both had been continuelly argumenting, but now become fully enhibited in then upper region of the strateghera, although its influence as yet was but slightly correct apart to be handler districts of the subjected earth. All the obstail boils and now entirely disappeared; even the menting eart, which as long the wider of our admiration had continued with soming energy to assure the engine of the style had now retirred, and we began currently to look forward to the arrival of the great bundancy that was soon to supply third prices.

About ten minutes past five one of those causal aberrations occurred, to which we have already allahed, when the ballicon rising rapidly we because mobiledy transported to an electric of about 12,000 feet. This was the highest point we attained throughout the whole veyage, and the effect was, in truth, equally pre-emissent with the contain by which it was produced. If we only reflect that our pointion at this allittine was such as to the called us to belied object as a distance of above one handred and fifty pulse on every side of us, but these objects been enticinary great or anticology entries go fact the attention, some faint like the mane stay of procyct which at that means the vanue adjected to our view. We shall then be seen complete, the current of a circle, whose distance, notation to above three handred mains in langth, districted was a heisen, the circumstance of which executing an equal number of longues, comprised within its circuit an expuse of visible attention of which executing an equal number of longues, comprised within its circuit an expuse of visible attention of the attention of the execution of the executi

In one of these latter movements, which took place at about a quarter past six,\* the balloon having nearly represented its highest elevation suchdenly brought us in full view of the sun, and for the first time gladdened with the assurance of a speechy return of day.

Rewords, fained, must be the yer which could loop to do justice to a soun flat that which have present intells to our view. The currence extent of the propert, the boundless variety is charbered; the unsqualer grandess of the objects it displayed, the singular wordly of the numer under which they were beheld; and the artifling contrast by affected to that instants and those scene to which we list do go and to lately bree confined, are effects and circumstances which no description is equaled of representing in the light in which they except to be placed in order to be drive greateded. There for a lowest it to a fertile insighation to fill in the faint outlines of a rough and unfanished heirelt, then by a lame and imported coloring run the risk of surring regarders of survive.

This splendid spectacle, however, we were not long destined to enjoy; a rapid descent, which shortly after councel, for a while concealing it from our view, and once more consigning us to the shades of night, which still continued to reign unbroken throughout the lower region of the air.

Again we row within the reach of this delightful prospect, and again sid we lose sight of it and the vapour and obscurity that accompanied or descent; nor was it till we had three times made the sum rise, and twice beheld it set, that we could fairly consider it established above the horizon and daylight complete upon the plane of the earth lensath us.

From this time forward all our observation was principally directed to the nature of the country and its adoptation to the descent which we had now resolved to direct the first filling operaturity. This stem per aspectation of the control of the

\* The time referred to here and elsewhere throughout this marnifare is that of Greenwich. Upon the completion of the veyage, a variation amounting to about thirty-four numers was found to raid between the lines indicated at its two extremes; the chromoselves of Weildung league so match in solvance of those of London. This variation was occasioned by the casterly direction of our course, and the difference of longitude.

† Yorsler course the powerful king of day, Rejoicing in the Zant. The Issuening cloud, The kindling surve, and the mennina is brow, Illustrated with field gold, his most approach Betoher, girls. Let now, uppersed all, Andret the developing tearth and colour? air, He looks in bustliess majedy absend, And sheefs the shaling day, that burnish plays On recks, and falls, and brown, and wandering stroms on recks, and falls, and brown, and wandering stroms High gleaning from fair. Prime cheerer, light! Of all material beings first and lest! Effect districts a replexed robe! Without whose voining beauty all were wrapt in unconsential gloom; and thou, O sun! Soul of surrounding worlds! in whem but seen Shines out thy Maker.—Transmen.

1. This presumption will not appear as extrargant when we consider the common rapidity with which the course of the halton is liable to to effected, and the inequalithity of obtaining any indicate as to its asserted things in being perject of obtaining any indicate one to its asserted things in being perject of other as which we had just excent their given by the period to the present the present rapid of motion at which the bulloon has been known to be impelled in these introdes, we should, our the period of our deceant, have accomplished a distance of above two thousand miles.

As soon as we had come to this determination all preparations were speedily commenced for the descent; the guide-rope was hauled in (an operation of much labour, owing to the bad construction and imperfect action of the windlass), the grapuel and cable lowered, and everything got ready that we might be able to avail ourselves of the first and fittest opportunity that might occur. To this intent, likewise, we quitted our exalted station, and sought a more humble and appropriate level, along which we continued to range for some time and to a considerable distance; the yet early hoor of the day deterring us from excepteting the descent, in the fear of not obtaining that ready assistance from the inhabitants which it is always the main object of the acrount, if possible, to secure

As the mists of the night began to clear away from the surface of the soil we were delighted to perceive a country intersected with roads, dotted with villaces, and enlivened with all the signs of an abundant and industrious population. The snowy covering which so lately chilled us with its forbidding aspect had now disappeared, except a few patches which still lingered in the crevices, or lay spread within the sheltered recesses of the numerous hills by which the surrounding neighbourhood was particularly distinguished. On the summit of one of these an isolated edifice of considerable magnitude and venerable antiquity appeared, just breaking through the vapours that yet partially concealed the morning landscape. Scated upon the very point of the eminence, it seemed like some ancient baronial castle, overlooking the prospect and extending its protection to a cluster of humbler dwellings that struggled around its luse. One or two towns, likewise, of superior pretensions were distinctly to be seen; giving promise of accommodation and advantages which, in our present emergencies and under our present convictions, were not to be neglected. Accordingly, having pitched upon the spot most proper for

the purpose, the valve was opened and we commenced our descent.

The place so selected was a small grassy vale, of about a quarter of a mile in breadth, embesomed in hills, whose sides and summits were completely enveloped with trees. Beyond this, on the opposite side, by another valley of the same description; the only one visible for many miles, where we could conveniently effect our landing: an endless succession of forest scenery completing the landscape in the direction in which we should have had to proceed. Into the former of these we now precipitated our descent, with the design of alighting, if possible, in the centre, clear of the woods that enclosed it on all sides. In these hopes we were, however, disappointed; the wind suddenly increasing as we approached the ground, so much accelerated the enward course of the balloon, that before the grapuel could take effectual hold of the soil we had passed the middle of the valley, and, sweeping rapidly over the ground, were borne close against the wooded declivity that flanked its eastern termination. To discharge a sufficiency of bullast to raise the balloon, and curry her clear of the impending danger, was the natural remedy. An nexpected obstacle to this operation here again presented itself; the sand which forms the ballast fracen during the night into a solid block of stone, refused to quit the bag in the proportion required, and no time remained to search for one more suited to the occasion. Not a moment was, in fact, to be lost; the valler was passed, and the branches of the trees that clothed the opposing precipics were already within a few feet of the balloon; the grapud continued to drag, and ne chance appeared of arresting her progress onward. In this emergency one alternative alone remained, and the sack itself, with all its contents, to the amount of fifty-six pounds in weight, were at once consigned to the earth. In a moment the balloon, lightened of so large a portion of her burden, had sorung on above a thousand foot, and clearing the mountain at a bound, was soon in rapid progress to the realms above. To counteract the consequence of this sudden accession of power, and avoid being carried beyond the reach of the second valley, which we have already described as the only other available spot for our descent, the valve was again opened, and issue given to a large quantity of gas; sufficient, as was calculated, to check the course of the balloon in time to enable us to attain the point to which all our views were now directed.

A second time, however, we were deemed to be disappointed. No somer had we completed this manustruthan by another caprice of nature, the wind suddenly abuting, we found ourselves at once becalmed and rapidly descending into the boson of the woods that capped the summit and clothed the sides of the intervening eminences From this dilemma we were only relieved by the timely discharge of a further portion of our weight; not, however, before the accelerated descent of the balloon had brought ne within a cubic's length of the ground.\* and almost in contact with the upper surface of the wood. Here, for a few moments, we continued to hover; the grapuel struggling with the topmost branches of the trees, and grasping and relinquishing its hold according to the varying impulse of the slight wind that prevailed at our elevation.

<sup>\*</sup> The length of the cable to which the grapuel is attached is about one hundred and twenty feet,

ASTRA CASTRA. While in this situation, we perceived standiar in a path in the wood, two females, the first inhabitants we had noticed, lost is astonishment and seemingly petrified with gaining upon so astounding an apparition. It was in vain we addressed them with a speaking-trumpet, in the hopes of procuring the assistance of some of the male population, which we conjectured could not be far off: the sound of our voices, proceeding from such an altitule, and invested with such an uncurthly character, only augmented their astonishment, and added to their fears; they fied incontinently, and without waiting farther parley sought the shelter of the neighbouring coverts.

After continuing for a few minutes longer in these straits, we at length reached the confines of the wood; when, resolving not to be again haffled in our designs by the treacherous inconstancy of the wind, the valve was opened to its fullest dimensions, and the grapnel taking hold shortly after, we came to the ground with considerable though by no means disagreeable rapidity.

Too much praise cannot be given to Mr. Green, for his excellent conduct throughout the whole of this intricate pilotage. It is not by reading a more description of the difficulties encountered, and the manner by which they were counteracted, that a correct judgment can be formed upon the merits of such a case as this; a further consideration is necessary—the knowledge that these difficulties did not proceed from the same source as the remedies by which they were defeated. In this light it is that the conduct of our celebrated captain has a right to be criticised; the impediments were those of uncontrollable nature—the victory, and the means employed to scene it, were all his own.

As soon as the descent was completed, and the power of the balloon sufficiently crippled to permit one of the party to quit the car, the inhabitants, who had hitherto steed aloof, regarding our managewres from behind the trees, began to flock in from all quarters; eveing, at first, our movements with considerable suspiciou, and not seldom looking up in the direction from which we had just alighted, in the expectation, no doubt, of witnessing a repetition of this, to them, inexplicable phenomenon,

A few words in German, however, served to discipate their fears, and secure their services. The first question, "Where are we?" was speedily answered, "In the Duchy of Nassau, about two leagues from the town of " The second was theirs, "Where do you come from?" "From London, which we left yesterday evening." Their astonishment at this declaration may be easily conceived. The fact, however, was not to be disputed. What they had seen was to the full as marvellous as anything we might choose to relate, and certainly enough to entitle us to consideration and command respect.

At all events, whether from above or felow, we were evidently strangers; a circumstance of itself sufficient at all times to have engaged the sympathy and assistance of an artless and hospitable people, but which, coupled as it was, in our case, with the possibility of one or other of the two preceding alternatives, brought us in for no small amount of homely deference and attention.

To those kindly feelings we endoavoured to contribute by every means in our power. Our stock of biscuits, wine, and brandy quickly disappeared, with a relish which the novelty of the journey they had so lately performed, tended, no doubt, considerably to augment. The brandy, in particular, so much stronger than any they had ever before essayed, attracted their special admiration; and as they, each in succession, drank off their allowance, they seemed by the exclamation of "Himzelischer Schnapps" (celestial dram), which accompanied overy draught, as well as by the npward directions of their eyes, to denote the quarter from which they now became fully convinced a beverage so delicious could alone have proceeded.

With all the willingness, however, which they displayed in their endeavours to assist us, it required no little management, and a thorough knowledge of the peculiar habits and propensities of the asiaal, to turn their services to a proper account. In the first place, the operation of emptying the balloon, at all times sufficiently tedious, was rendered more so in the present instance from the quantity of frozen moisture it had imbibed in the course of the night, and which we were desirous to get rid of by a little exposure to the sun before we had completely enclosed it. Now Germans, proverbially indolent, require no small degree of excitement to keep their attention and their services engaged to any continued pursuit. The slightest relaxation, therefore, on our part, was sure to be attended with a corresponding relaxation upon theirs, and in the event of our taxing their patience too severely there was no small probability that they would slacken in their efforts, and getting tired of seeing nothing done, eventually abandon us to our resources. On the other hand, to occupy their attention by a liberal distribution of "Schnapps"

<sup>\*</sup> It was half-past seven e'clock when this occurrence took place, and our descent could be fairly said to be completed. The duration of our voyage may therefore be calculated at exactly eighteen hours

(the only alternative that remained to us), was not without its particular inconvenience. German are never without pipes in their products, and enver thick it of using or delicing without conducting the opension by abstracting the said pipes and indisping in a friendly francistor; in which may be inconvenient to the conduction from a sune of recover's in external as new, we should have but to achieve the certain low of soon hand to each individual, and the other deprived of half for energy, when tree, well applied, were scarnly enough for the purpose. In achieve two we had followed at fact; the consequences was that half of one efficient flows were already bail up maching and it was only by a timely withdrawal of the supplies that we were enabled to consumit the services of the consulator.

With all these drawbacks, it was nearly twelve o'clock before the whole of our operations were concluded and the balloon, with all its accompanying apparatus, safely adjusted in the bottom of the cur. Our next step was to procure a cart and horses to convey it to Weilburg, the nearest place where we could expect to meet with the accommodation which the circumstances of the case rendered desirable. For this, as there was but one in the neighbourhood for many miles around suitable to the purpose, we were compelled to submit to a further delay of about an hour and a half. In the mean time we had some difficulty in inducing our kind and able condintors to accept of any remnneration for the timely assistance they had afforded us; nor was it until we had evinced by our perseverance a determination not to be refused, that we finally succeeded in persuading them to come to some definite arrangement among themselves as to what amount of contrensation abould be bestowed, and in what manner it should be distributed. Accordingly, as the magnitude of their numbers precluded the possibility of extending our bounty to all, fourteen were selected out of those who had taken a most prominent part on the occasion, and the sum of half a franc each, equal to about fivepence English, stated as the full amount of their expectations. This sum, with more liberality than produce, as appeared in the sequel, was immediately doubled, when a scene occurred to which no description is capable of communicating the entire effect. Sourcely had this unexpected extension of our bounty been announced to the fourteen fortunate individuals who were to participate in it, ere as many unwashed beards, black and brown, white, yellow, red, and grey, were simultaneously and unceremoniously thrust forward for the purpose of signifying their gratitude by effecting a solute, in a style which, in our country at least, is usually considered one of the peculiar privileges of the gentler sex. To refuse the proffered courtesy might have been construed into an affront, and we were absolutely in the very act of being subjected to this arrecable ordeal, when the seasonable arrival of the long-expected which saved as from the full infliction of the direful penalty. Overjoyed at our timely deliverance, all hands were summoned to assist in leading the waggon, and having mounted thereon ourselves, we quitted this, to us, ever memorable spot,\* and attended by an amazing concourse of persons of every rank, age, and sex, set out for Weilburg, which a few hours enabled us to attain

The fame of our adventure had, however, already preceded us. On our approach we found cornelves greede with acchanicion, and a mody verbours and homerable attentions availed one arrival. All the resource of the town were immediately placed at our disposal; the use of the archical manipe was tendered for the occupation of the bullow; and sentire, more indeed as a goard of honour than of protection, stationed at the doors and avenue-looking to the place of its reception.

Here then we needed to remain until our future movements should be determined by the return of the letters we had despected to Parti immediately upon our descent. In the mean time, fround by the pectiles arbustness of the building, we suitled sometime of this delay to spen and infinite the follows, in well for the suppose of deging and canning it is to make some return for the obligations we wan start, by cartifolting, regardly the entionity of our hospitable entertainers. It would be accuracy resulting want to be interest whereoith the hishlands we mad to pend faith, to them, not evalething in the market in the proved in twinters if from all quarters, for many a longue around, or the gracted acknowledge-nate with which they accure crossed to correctly an abstraction of the frequency of the provided and the contraction of the provided and the contraction are designed for frequently and the contraction of the con

Nothing in fact could surpose the courtoy and attention that we experienced from this simple-hearted and hospitable community, during the whole period of our residence at Weilburg. Every one seemed to vie with each other in conferring favour and outributing to our entertainment. Italia, discuss, convert, and other ammentant

<sup>&</sup>quot;The exact spot where the event took place was in a field slight, some to a milk showed by the name of Diffinance, similared in the railey of Ethern, in the commune of Niedershawara, about two largers from the hown of Woldershawara, about two largers from the year (18).

were given without intermission; poems were composed in honour of our adventure, and the congratulation of the city presented to us by a deputation of the principal citizens, headed by their chief civil officer, in the form of a document daily signed and selected by the competent authorities.

Among the fasiry recruities to which our unexpected arrival at Welling goes ris, we must see any assume the coverage of richesting the hallow, which bod jab on the day persons to ordpartum, the Bines, Billes, Grand Malgre dee Earst Freix, and the Cohord Harms de Press, being the goldsthers; the Rimons de Billes and the Brances do Bingares, the goldschers, on the context. The ballow largest peed intested with its the greatest size the dimensions of the Janes would shank, right young ladio, in company with Mr. Gine, network with the legislant splares, and the same of "The Crust Billos of Nassan's Faring been beloved by our of their namely. Allful: Thereon, he levely west anniable singular of the billion of Rassan's Faring been beloved by our of their namely. Allful: Thereon, he levely west anniable singular of the Batton do Billon, necessagated by a signar which had been measured at the time of our devent.

One other art of horozomble strution yet remains to be recorded. On the evening of the same day, the law what do regip in the sorting of the same should be relieved to the sorting of the relieved to the sorting of our rivin, and the agreeable intercourse to which it had given rise, by some some fastering display of forcer than any we had yet experienced. A great desiral was consequently lead in the principle chausers of the dails into which had been transfelled contract for the purpose, and at which all the first personages of the town were ascertical to meet as. After the dismate, re thrust the output had been contributed in the mental gooded the purious architecture of the contributed of which are cover of hards was placed between on the contributed of the contributed of the contributed of which are of the contributed of the contributed of the contributed of which are cover of hards was placed between on the contributed of the c

From such as universal display of loopitality and hishinose it would be difficult to single out any to when in particular are thanks an done; among those however, whose satisfacts and circumstances entitle them to operally notice, were the litter de Bibles, firmed blatter due litter at Feetie; the Boron do Dangere, from Everye do-so Albeles, personnel or the Golden Brance & Prese, and their respective bladies, 31 Hirtcheskin, Pressive Conseller de Michael, 32 Girons, Franks Conseller de Justice, 32 Friedmann, Superior of the University, and 32 whose masses would prove that kills the consense for the kindows we reveived at their hands.

Through the Barca de Bibra, Blowies, we took the opportunity to present to His Highness the Dake of Assent the flag+y-hish accesspated the acquellion, as a slight tolern of the bospitable reception what experienced in his territoria, with a request that they should be preserved, in commonstation of the occurrance, asseng the archives of the Dead Palace at Weilburg, where they now its absquide of that which half a century before M. Blanchard deposited in like manner, to perpetent the remembrance of a like virule.

On the following morning, November 20th at an early hour, we look heave of Weilburg and its hospitable indicates, and set out for Colonit on our way to Paris whither it was now determined we should proceed. At Colonit, where we arrived hat he man evening it was our intention to purchase a carrige, and, having stripped it of its body, place the car containing the balloon and other accessories upon the springs, and in that guise, availing ourselves of the same convergence, continue our Journey by 100.

This, with some difficulty and the obley of a couple of days, we at length accomplished, and by a proper adjument of the contrasts, faing a temporary set athurst and patenting the wheel with covering of all-olds, constructed, as we considered (how correctly will appear in the sequelt), a very convenient retreat for the accommodation of such of the party as should be adoutine to verying. He real new parted from our correspond Mr. Rolland, whose business requiring his immediate return to England, I glodly undertook to accompany the lablos as Davie.

See Appendix G. No. 1.
 Besides the must instrond insignis, three flage displayed a swist of allogorial representations descriptive of the rise and progress of nerostation. Independent, however, of any next which they night powers from their execution or design, there was one crummatance in their listory which readered float intrabable in

the eyes of the accessari; they had already performed two handred and twelsy-one voyages in the air, having been the constant companions of  $M_{\rm c}$  (freen's extunction are ration-like fifth ascent, wherein he had the mid-fortune to lose his bulleton, and all it contained, in the so off Beckely Hoof.

Accordingly, all our arrangements being at length completed, ordy on the merning of the 24th Mr. Green and upperl going are text, the being the control of t

As it we wait to think of trying to resuly these disasters in the country when we then were, our only altered was also perfected as fast are could, stall by analogarized state gain where we might design institute in repair our shattend whether. It was not his towers, till the condessor of the second, or rather the seconding of the third by that we were also to accomplish this. At the relings of Thirdwise, below who had been designed by the intrinseasy of the washest to pass the proceeding night, we at length proceed a quantity of common machine, and having some it in his stated to be successful which, we at length proceed a quantity of common machine, and having some it in his stated of lower on all sides, usually as and to place in the contribution of the same, the contribution of the contribut

After journeying in this way for six long days and longer nights, we at length reached l'aris, where new honours and a hospitable entertainment awaited our arrival.\*

Thus craded an expellion which, whether we regard the extent of country it powed over, the three wherein it was performed, or the result of the experience of the above of which it was anderlocks any parties when the considered among the most interesting and important which have hiddered provided from the waste source. Storting from London, and treating the no. which are averables the prevented from the single as see important feature in our route, in the desir upon of righteen here we preferred a veryony which, including only those determinants where the contraction we have also been contained to associate, nother counted the fails there of our center of the handless of our center of the handless of the center of the

It would be realizes, as well as walous, to commercial all the places of mone or notivity, which a subsequent commission of the map slickly the reported or expressions of alleformst notions by the way, showed no being clitter possed over or approached at some period or other dering this extraordinary progrination. A nondertakpeates of few hisplanes, England, Frances, Reglines, Francisc Germany, and the bulley of Assocra; a limit port of few hisplanes, England, Frances, Reglines, Transite Germany, and the bulley of Assocra; a limit port of the subsequent to the subsequent terms of the contract of t

medal which was bestowed upon Mr. Green, by the Society of the

Among the other testimonies of honourable distinction which;
 "Académie de l'Industrie Française." for his ingraions discorry
the various relectific and other hodi's in that sity count rived upon
 of the guide-rapp, with the placuples of which they expressed them
to in respect of our undertaking, I must not darget to mention the
 alway perfectly mathed.

ASTRA CASTRA. of an horizon which our superior elevation, and the various aberrations we experienced, enabled us to extend far layond what might be expected from a more consideration of the line connecting the two extremities of our route.

To all this there was but one drawback, in the time of year in which the experiment was conducted, and which, by curtailing our daylight, devoted to the obscurity of night so large and interesting a portion of the expedition. Over this, however, we had no control; the constant occupation of the balloon for the purposes of public exhibition during the summer months, left no chance of its being procurable at a better season of the year, capecially for a project such as ours, the determination of which as to time and distance was a matter of complete uncertainty. The excursion must therefore have been undertaken as it was, or altogether abandoned; of these alternatives Mr. Holland unhesitatingly preferred the former.

Ere concluding this hasty narrative, a word or two is required concerning the success of that experiment which formed the pain feature, as well as the chief object of the expedition. That object I have already stated to have been the verification, by proper trial, of the power of the guide-rope in determining the course of the balloon within certain restrictions, and the f-asibility of its comployment under every aspect of circumstances, to such an extent as to render it a valuable and efficient instrument in the hands of the practical aeronaut. In both these respects I have no hesitation in declaring the success of the experiment to have been complete and the discovery itself one, the entire result of which, on the future progress of the art, it would be impossible at present to anticipate. With such an instrument as this, there now seems to be no limit to the powers of aerostation; no bounds to the sphere of action. All the theoretical objections which a hasty consideration of the means might otherwise have suggested, experiment has already proved to be erroneous; and, perhaps, the best illustration that can be afforded of the powerful influence which this discovery is capable of exerting in favour of the art is, that upder its auspices and with all other advantages to the extent we enjoyed them on the late exession, I should not feel the alightest diffidence in committing myself to the conduct of the winds, with the intention of continuing my voyage until I had completed in my course the circuit of the world itself.

## MR. COCKING'S FATAL PARACHUTE DESCENT.

1837 .- In August, 1814, Mr. Cocking gave a lecture on the true form of the parachute, before the City Philosophical Society, which was so well received that he was requested to repeat it before the Society of Arts, who, as a proof of their approbation, awarded him a medal. Twenty-three years had now elapsed, when, being doubtless incited by the success of the Nassan flight, he made earnest entreaties to be taken up with his parachnte; and, by his importunity and self-confidence, he at length succeeded in obtaining the consent of Mr. Green, Mr. Hughes, and Mr. Gye, to this arrangement, which ended so unhappily for himself.

The following letter of Mr. Monck Mason discusses the whole subject in a public paper on the day preceding the ascent -

## To THE EUTOR OF 'THE MORNING HERALD,"

SIR, In consideration of the forthcoming experiment, which I see announced for to-morrow, perhaps the following observations upon the subject of the parachute in general, and the merits of the two different systems which are now about to be practically illustrated, in particular, may not be thought an worthy of notice.

The principle of the parachute is so extremely simple that the idea must no doubt have occurred to many persons, of whom history, however, has failed to preserve a record. Even in the distant and half-civilised regions of Siam, Father Loubere, In his curious account of that country, published acarly two centuries since, makes mention of one who was wont exceedingly to divert the Court by his exploits in descending from great heights through the aid of such an instrument; a practice which we have reason to believe was not confined to that alone of all the constrict of the East. In Europe, however, no notice appears of any strong to employ the possistent as a preventive against to negal absent temporal, the strongless regular policy and preventive of the temporal policy and the prevention of the temporal policy and the prevention of the temporal policy and the prevention of the policy and the prevention of the policy and the policy a



M. GARNAGES'S PARACHETA.

To André-Jacques Garnerin, who next followed in the career of the parachute, is due the merit, such as it is, of having been the first who ever successfully descended from a balloon by the aid of that machine. This be accomplished in an ascent from Paris, on the 22nd of October, 1797 (see p. 111), in the presence of the Court of France, and of an immense concourse of people, who had assembled to witness the adventurous experiment. At the height of about 2000 feet the act of separation was effected, and the balloon and parachate immediately started off in opposite directions. The former, however, was soon lost sight of all eves being involuntarily directed towards the descending mass, and all interest centred in the individual it contained. For a few seconds the consummation of his fate seemed to be altogether inevitable, the parachute obstinately retaining the collapsed position in which it had originally ascended. All of a sudden, however, it burst into its proper shape, and the downward progress of the adventurer appeared at once to have been arrested. The fears of the spectators now began to assume another aspect: the moment the parachate lad expanded, the car of the aeronant, which was suspended about twenty feet below it, shot out on one side with an imports that almost brought it upon a level with the rest of the apparatus, and for an instant seemed to threaten the subversion of the whole. Eccovering itself, however, by its force of gravitation, it soon re-descended, and awinging round to the opposite corner, commenced a series of violent oscillations, which for a considerable time seemed to render the issue of the experiment a matter of much uncertainty. As he approached the earth, however, these gradually became fainter, and although they never entirely disappeared, soon cossed to excite the immediate apprehension of his friends. At length, in about twelveminutes, he reached the ground, and was released from the parachute, without having experienced other injury than a feeble shock at the instant of collision, and a slight names which shortly after supervened, occasioned, it is supposed, by the unsteady nature of the movement to which he was subjected in the descent.

Shortly after this, Garnerin proceeded to England, where he made his third coay, in an ascent from North Audley Street, on the 21st of September, 1802, being the only one of the kind hitherto ever exhibited in this country. Since that privid the gamelatic has frequently been made use of, both by limited and others, in various parts of the conditional, adverage between the the purpose of public calculation are, an idea, and a versu of sense instance, empty case, in which any absolute orderatego has ever accord from its employment? I allost to the one of collection of the collection

160

The principle upon which all these paraclares were constructed in the same, and consists simply of a fastness done of falls relines from twenty first to the convergible for its dimenser. From the outer magical all resonals, a stated interests proceed a large sembler of cools, in bength about the dimenser of the done itself, which king collected tagether in non-pint, and made fast to nuclear of superior dimensions, attended to the spec of the mensions, error to maintain it in its form when expanded in the progress of the donesst. To this outsire out different est a distinct-shed to the part of the measures, are first the contract of the contract o

In the choice of the form of the pure-dute is original inventors were chiefly galded by the desire to obtain the greatest amospheric resistance consistent with a given vector of our dron; and although the form they did along may not be that which amovem courtly to this description, yet it falls about of it so little as to mere than compensate the deficiency bethe other advantages which it affects.

Two objectionable circumstances, however, are generally found to attend the employment of the parachete as here described, namely, the length of time which is wont to chape before it becomes antificiently expanded to arrest the fall of the individual, and the violent oscillatory movement which almost invariably accompanies the descent.

In order to obviate these deficiencies a variety of plans were proposed at different times, amongst which is that now shortly to be tried, and for which I perceive the proprietors of Vanshall Gardens claim the merit of originality. The blue, however, is a very old and a very common one, although, from certain inherent deficiencies,

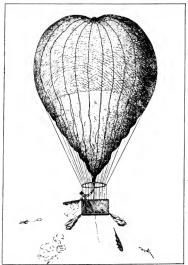


MR. COCKING'S PARACHUTE.

the practical cultivators of the set have decided adapting it. It was published in Paris mostly forty years agorevived in England by Sir George Cayley, and communicated by him, with dort interesting notices upon assessation, if I mistake set, to the twenty-fourth volume of "Nicholeson's Journal." It was assessmently near fully developed and improved by Mr. Kerr, by whom it was in coursel capacitaness practically and publicly illustrated, and in finally detailed in the "Except-special Enlicensis," we troved capacitaness practically and publicly illustrated, and in finally detailed in the "Except-special Enlicensis," we troved capacitaness of the article based," Avenuation."

The principle of the plan alluded to is simply an inventon of the preceding ones, in which the surface of beat resistance is much to decound figerenous, and so contrived as at all times to remain in a state of expansion. The precise form of that which is now assumed for experiment is an inverted cone, somewhat fastened, to the spec of which is attacked the car of the adventurer. The shirt elegists of this arrangement I have already stated to be the

## THE ENTERPRIZING LUNARDI'S GRAND AIR BALLOON,



What and is flight from the Arthry ground, Ish 1. "I row, I made the archamolouse of som on Amban. The working of Machine reund to the congress legal of war then also continued flowing in the saw for the lease And here alofted what it was beyond What, or Mathedom, as welso from Landom.

Photo ninergraphed with Orderitor Survey Order Smithingdon under the supermindence of top\* Willdolm hour R.E. Gil Sie'll, houses R.E. E.R.S. Sie Director, 1864

correction of the oscillatory motion, and the insurance of the speedy action of the machine after its detachment; to the former of those, its shape was intended to conduce; to the latter, its state of permanent expansion. And yet, in seeking to obviate the irregularities in question by any modification in the form of the purachute, a great error has been committed, which nothing but an ignorance of their real cause could ever have occasioned. Indeed these oscillations soon very much to have puzzled the accommutant world, both here and elsewhere, and yet the grounds upon which they are accountable are extremely simple. Entirely independent of the form, the aberrations in question are merely the consequence of a first irregularity impressed upon the machine by the uncomal expunsion of its parts. In the act of opening, it is next to impossible that all the gores of the capacious dome should in the same asoment attain the same degree of elevation; the side which is first opened to its full extent receives the first impression of resistance; the machine is thrown out of its equipoise; the irregularity which it first assumes becomes quickly transferred to the other side by the gravitation of the appended weight, and a reciprocal interchance of forces thus becomes established, which the atmosphere possesses but too little consistence speedily to subdue. Any attempt to correct those derangements by a medification of the form of the parachute is extremely futile; but to endeavour to do so in the way proposed is worse than fatile: it is really to secrifice the very principles of the machine to the attainment of an end to which the condition in question does in no way conduce. By a course of calculation founded upon the admitted axious of dynamics (all of which are, in fact, the results of actual experiment), we learn that the resistance upon the base of a cone (supposing it a plane surface) is to that upon its oblique presentation in the proportion of unity to the sine-squared of half the vertical angle.\*

Supposing the apex of the cone to be an angle of 120 degrees (from which, I have heard, it is not for

thinks to both the companion of the companion resistance of thinks to both of different forms, in by any friend W. C. Offley, East, Fellow of Calus College, Combrelge, and will not be examined without interest, repressingly, considering the disocious witch, the probable occurrence of which it was originally undertaken to obtainly.

It is usual to calculate the resistance of finite on bolice in motion upon the hypothesis of the particles of fluid leaving the surface of the body without impediment immediately after impact. This hypothesis is evidently incorrect in practice, innomuck as the partirles of air reflected from the surface must more or less interfore with those to progress towards it. It will be easily conceived that this effect must be the greatest when the surface on which the air impiages is concave, and that etosequently it soust generate a kind of conspression in the concavity, which must much increase the whole effect of the resisting fluid. The increase of re-istance arising from this cause will diminish gradually as the concavity nishes, and will still be considerable when the surface is a plane; but whenever it becomes convex, the effect arising from this source because imprevenity small, from the facility with which the particles glide off after impact. These observations apply to that part of the effect which is disregarded in the mathematical calculations of the resistance of fluids; but it will be presently shows that even apart from those considerations the moistures of the air upon a convex surface is considerably less than that upon a To the mathematical render this will be at once apparent; for the instruction of others, however, it may be as well to observe, that in the case of the plane the impact is direct, and consequently the whole momentum of the particles of air is exerted in resisting the advance of the body; whereas, in the case of the convex surface of a cone, the impact being oblique, only a certain pertion of that free becomes effective in opposing its progress through the atmosphere. It is true that the effect of the friction of the air arrange the convex surface of the cone would in some measure tend to increase this resistance, and that this off of in a cone with a very scute angle might considerably modify the required calculation; but in the case of a rone whose vertical angle is obtuse this effect may safely be disregarded, as more than counteracted by the eigenmeaners installuded to

nature of .

Proceeding to calculate the difference between the resistance on the course surface of a cone and on its bane, we shall find it considerable; and it, besides, we shoke into account the effort of the interference of the reflected with the implaging particles of air, we shall see how much there in in favour of the conserve paradistra

 The following investigation of the comparative resistance of hide to bedien of different forms, in by my friend W C. Ottley,
 surface of the case are, in the direction of the motion. Then draw



rn at right angles to the surface of the cone, on at night engion to ru, and so perpendicular to ru.

rs, and appropriation is real.

Then the effectivenessively set of the force or on the serious of Then the effectivenessively set or zer re again of an effective part of this force resolved in the effectiveness of the notion of the contains the effectiveness of the effectiveness of

of field on any given persion of a surface will be proportional to the size of the angle of Invitation side  $\theta$ , and patting p to represent the direct resistance of the six on a unit of surface, and  $\theta$ 0 to represent an elementary pertian of the surface of the cone, we have derive the part of the part of the cone, we have derive the part of the part of the first part of the lines  $p_{\rm co}$  at the length of the lines  $p_{\rm co}$  at the length of the lines  $p_{\rm co}$  at the length of the lines, where  $\theta$ 0 is  $\theta$ 1 is  $\theta$ 2 is  $\theta$ 2 if  $\theta$ 3 is  $\theta$ 3 in  $\theta$ 4 in  $\theta$ 4 in  $\theta$ 4 in  $\theta$ 4 in  $\theta$ 5 in  $\theta$ 4 in  $\theta$ 5 in  $\theta$ 4 in  $\theta$ 5 in  $\theta$ 

integrating  $u = \Pi g$  size  $^{i}g$   $g^{i}$ . Now the positione on the base of the case -g invitiplied into the surface of the base, because the impact is direct;  $\cdot \cdot \cdot R = g \Pi g^{i}$ . Hence the resistance on the surface of the case is to the reviolance on the base as a size  $\frac{1}{2}$  single of the case is to unity.

Thus, if the vertical angle of the come were  $30^\circ$ , then  $\frac{1}{2}$  angle =  $52^\circ$ ; now size  $52^\circ$  and  $32^\circ$  angle =  $52^\circ$ ; now size  $52^\circ$  angle =  $52^\circ$ ; now size  $52^\circ$  angle =  $52^\circ$  angle = 5

reasonal, this properties, it will be see by reference to the note below, would small in numbers exactly as is to 5; thus indicating a law of cose quarter of the effect which would have been affected by an existent an exact in catesta to its bose. Assuring, therefore, the experied nontents of this latter to be 10% against feet (as would be the case were it emils as 15 feet, than which, however, it is exemiting, low), the power of the parachesis and question to relate the full of the individual would only be equal to that of a circular plane whose surface was 60; supares feet.

The trainful vicinity of only speechase, or the rate at which it would reach the ground, is only computed.

From the experimental of Pergues, Rosse, Sussession, and others, no the excursely of which the groutest reliaions guide helpsod, we learn that the force serviced by the atmosphere in motion at the rate of one mile per born, against a plant art pitch angules to the direction of the course, in the fraction of the course, in the state of cold of particles, which force we are further waves increase directly as the squares of the velocities under which it is under the contraction of the contrac

armine is not the situation of the contraction of t

To those who are not in the babit of forming an estimate of consequences upon data of the above nature, it were to give some notion of the force developed in such a proceeding, merely to suggest the consideration of the shock they would receive were they to be launched unprotectedly against a solid wall from the top of a vehicle

travelling continuously at the rate of twelve miles an hour,

Nor is this a result predict to the above above of all predictors upon the same construction, or one which any arrangement of its continuits with regred to recipit and size could be results it to avail. Owing to the pervises nature of the principle spon which it is contrived (all the force which it reconstructs in its employment string in distinct expension to the maintenance of its report first), a depress of through becomes messagers in its concervaint country incompetities with the reposition of weight reservation to the proper regulation of its decount. This is on inconsistency, that his property with thirty weight which all the error. There is noted limit in terms consistency that the property with thirty weight which all the error. There is noted limit in terms to a same cases this limit it very provelly attained; and I think it would not be difficult to prove that in this particular intainse it falls for short of what would be recovery to assore the purpose in the allowance of the property and the processors.

With such an obtatele to control with, I have no hoststate in doctring that no purchase on ever be constructed upon the principle is specious that thall be equided or furthing the fall of such within the restriction of speed message for his final powerstate. No argument in contravention of this position, drawn from a condclosural or despitement paper, annuller rock, is atti althorished. In comparative experiences of this instruction are certain dements which cannot be made to keep use with the rot, and which, remaining always the same, entry invalidates an analogy which it might be thought proper in institute between them. So long as the serviregarded of them falls within a certain limit, there is no doubtf of the moreas of their employment, the momen it mass that limit, one other of these final principle legistic to give way, per can in lathe we then therefore.

still remained 413 pounds to be had to the account of the apparatus above ; v.ry nearly twice as much as that at which it was originally

Some idea may be had of the frees manner is which a transaction traverlying not sum than 16 of a rane, was conducted, when we observe that in the public innatories most. Some which alone the world could advise may information on the neighbor, the weight of the thread could not be a proposed in the state of the state before the concern, in the largest upon the body of the suferimant wireles, as will be seen further on, it was made apported that, after deducting 170 pounds which, it means used to ways of 60 Mc Celleng, there

<sup>†</sup> The calculations according to the formula of Dr. Hetter, which here followed in the original, given a result is ensulty ceinciding with that above stated, that we have thought it unnecessary to report them here. The terminal velocity, as compreted upon these generals, would have been 19½ feet in a second; assured upon the greater than that declared by the above.

with or supplied by any modification of the rest. On the contrary, any attempt to resort to such a remedy only tends to multiply the forces by which that fixed principle itself is really subdued.

If this is true in cases where the modifications alluded to are not necessarily more than are required for the end to which they are sought to be applied, as, for instance, where an increase in the quantity of material is merely made to supply a deficiency in its strength, it is doubly true where their introduction absolutely gives rise to circumstances by which a further increase in their amount is imperatively required. The manner in which this operates in the present case will appear the more readily when we consider that all the modifications in question, involving the increase of weight for the purposes of strength, are referable to the great hose or upper framework of the machine tending directly to the derangement of its equipose, and calling for the further addition of weight in another quarter, where it not only conduces nothing towards strength (the want of which it was originally introduced to supply), but actually operates to create a still further domand for it on its own account, recomitating the introduction of a further weight, and thus establishing a reciprocal alternation of cause and effect, under the operation of which the very deficiencies themselves are augmented by the means whereby it is sought to repair them. These are objections affecting the principles of the parachete in question from which those mon the old construction are entirely free. In them the direction of the forces developed in the descent is exactly the most favourable it is possible to conceive, both as regards the retention of the form, and the maintonance of the equilibrium; rendering unnecessary all accessions of weight, sure what are required for strength alone, and reducing even these to the smallest possible amount consistent with the actual cohesion of the puris. In the former, on the contrary, the tendency of all these is exactly the reverse; directly opposed to the maintenance of the form, the more they contribute to the retardation of the descent, the more they operate towards the destruction of the machine; while their chiefest force being exerted upon the outer edges of the superior surface, should the slightest inequality take place in their action, by which one side becomes operated upon more strongly than another, overything will favour the derangement of the equipoise, which nething remains to check but the disposition of the weights themselves. In the present instance, this disposition is the most unfavourable to the exercise of such a restmint that it is possible to imagine. The parachute is stated to weigh 223 pounds; Mr. Cocking 177. It requires but little judgment to foresee how precarious must be the equipoise of a machine so constructed and so disposed. Even the advantage which the removal of the centre of gravity (which ought to be within the individual himself) would confer has here been neglected; placed in the very apex of the cone, the slightest inclination will be enough to throw his weight into the body of the puruchate, and favour its descent in any way which the deranging circumstances may incline it to assume

With specif, therefore, to the employment of the principate in question, or, indeed, of any other that may be constructed upon the man principal. It has no belatistic in prefacing that one of two creats must invertible place, according to the special nature of the defect which may happen to be producinant; rither if will come to the ground with a degree of frew we have before shown to be incompatible with the final preservation of the individual, or, should it be attrasped to made it sufficiently light to resist that conclusion, it must give vary brought that unders curries for the force is well necessarily develop in the document.

Resides these ensurial objections to the projected parachets, there are others of minor importance, chingly spending the proteint application, but which, all takes together, militate grantly ambient the propert of it is obption as a convincion mode of regulating a director. Among these, I shall only austice the difficulty in the first instance of attaching it to the bulbon, opercially if the wind should happen to be at all light, and the great opportion which it must recovarily ofter to the ascent, owing to the permanent state of supassion upon the principle of which it is constructed.

All those dissilvantages, the seconsary consequence of the shape, are incurred for the sele purpose of availing, as defect which do not depend upon the shape at all and which would have been equily swinted by applying the principle of premanent expansion to the usual paracters, or even without any further alteration that by morely intensing the interest between the plant of semplation of the solidage entered intensing the first order of the residual generation of the solidage entered intensing the soliday of the solidage entered in the solidage entered entered

More might be said on the subject, but that the inutility of the invention does not excuse a further treepase.

M. M.

The newspaper account of the fatal result of Mr. Cocking's parachute descent is as follows:-

We regret to have to state that the experiment of the descent of the parachute has terminated fatally to Mr. Cocking. In consequence of the amounterment that he was to ascend in his parachute suspended to the great Nassan balkon, a great number of persons, amongst whom were many of the first nobility of the country, assembled in the Gardens to witness the experiment. Without the Gardens, upon Vanxhall Bridge, and upon Millbank, the crowd was immense. Thousands of persons filled all the streets in the neighbourhood of Vauxhall, and a loveus crowd swarmed on every eminence and open snot that commanded a fair view of the horizon. The Thomas was literally covered with boats, and presented an appearance of the most magnificent description. The time fixed for the accent of the accounts was five o'clock; but on our entering the Gardens at that hour we found that the process of inflation of Mr. Green's Nassau balloon was not yet completed. This afforded as an opportunity of inspecting the parachute in which Mr. Cocking contemplated his awful descent, and we had some conversation with the unfortunate gentleman on the principle of his contrivance, and the altitude at which he proposed to sever his connexion with the balloon of Mr. Green. Mr. Cocking, who was a gentlemanly man, short in stature and somewhat stout, and apparently of the age of fifty-two or fifty-three, gave the next obliging answers to our queries, and explained that his purschate was constructed on a totally different plan from that of M. Garnerin. The latter he described as of the form of an umbrella, closed at the moment of descent, but expanded by the atmosphere as it approached the earth, and forming a sort of capopy over the acronant. His parachate, on the centrary, was in the form of an nubrella revened, the cavity containing the air being uppermost, with the view, he said, of preventing the escillation which proved so disastrous to M. Garnerin. As the parachute stood upon the ground, we were numble to see very exactly the place to be occupied by the aeronaut; but shortly afterwards it was raised to an altitude of about four feet, when we perceived a circular orifice of about a yard in diameter, to which a basket or car was attached by several cords. Mr. Cocking expressed by words the utmost confidence in the result of his experiment: but it appeared to us that it was a confidence which he did not feel. His restless looks and nervousness of manner seemed to belie the bravery of his speech; and we thought more than once that his mind was ill at ease, and that he would willingly have postponed the attempt until a loss hazardous trial had assured him of its safety. When questioned as to the danger, he remarked that none existed for him, and that the greatest peril, if any, would attend the balloon of the Messes. Green when suddenly relieved from the weight of himself and the parachate (about five hundred weight). Notwithstanding the confidence of this assertion, an uneasy twinkle in his eye convinced us that he was not so sure of this as he appeared to be.

The time which had chapsed since an attempt to descend by a paraclaste, and more particularly the novel construction of that which was exhibited, added to the perilous nature of the feat intended to be achieved, had combined to cause an unusual excitement in the public mind. Curiosity, however, induced all assembled to bear the delay which occurred with great goodhumour, and to attribute it to the right cause, which, in justice to Mosers. Hughes and Gye, the respectable proprietors of the Gardens, we feel it our duty to state was a landable anxiety - First, That Mr. Cocking should not ascend, if he felt in the least degree doubtful as to his success; and, secondly, that if he did, every possible premution should be taken, himself (Mr. Cocking) superintending, that no defect or oversight in any of the minuties should endanger his safety. So averse were they to be considered as urging him to the attempt, that at the last moment, and even for several days previously, they had not only end-avoured to discusde him, but actually, when the preparations were concluded, offered to make an apology to the company, return the money paid at the doors, and take upon themselves all the consequences which might arise from the disappointment. Mr. F. Gye, who was particularly anxious in his attention to all the arrangements of the experiment, and who is entitled to every praise for the manner in which he exerted himself to prevent the possibility of accident, advised Mr. Cocking, if he felt the least timidity, to relinquish his attempt. Mr. Cocking, however, professed himself most anxious to carry his automorement into execution; and after thanking Mr. Gye for his kindness and solicitude, professed himself most eager to ascend.

Towards six clock Mr. Green and Mr. Spenere, the solicitor, entered their hallons, which was allowed to assured to an altitude of about forety feet, that the parashets emplet be brought directly unleir in and accuryly fixed. It was acrea 'clock before all the preparations were completed, at which time the whole apparatus was distinctly within the every one in the Gardens. Considerable impatience had been manifested at the long delay which had taken place, but a the position of the pranctube towers more otherly defined, a general chaping of about accuracy and the promotion of the control of the contr

the joy of the multitude. Another half hour passed away, during which time Mr. Cocking was engaged in carnest conversation with several of his friends. The band of the Surrey Yeonaanry suddenly struck up the National Anthens, which being considered the signal for the cords to be lossened, a load hazas proceeded from the Gardens, and was re-echoed by the impatient mob outside. At this moment a tube or pipe of linen was lowered by the Mesors. Green from the cur of their bulloon through the orifice in the purachute, and past the basket in which Mr. t'ocking was to sit. This, we soon discovered, was for the converance of the bullast it is found necessary to discharge on the ascent of a balloon, and which, if it had been thrown out in the usual manner, would have ledged in the parachute. All the preparations having been completed, Mr. Cocking (having previously stripped off his coat as too cumbersome, and put on a light jacket) at pped into the car amid the acclamations of the company. Some of his friends offered him a glass of wine, which he drank, and having shaken them all cordially by the hand, little knowing that it would be for the last time, the cords were loosened, and the bullson and its attendant parachute mannted into the heavens amid the renewed cheering of the crowd. The early part of the afternoon had been remarkably fine and clear, but about this time (half-past seven) the sky had become somewhat overcust, and a brone had spring up. No apprehensions, however, were entertained, and the scene at that moment was as gar and cheerful us it is possible to imagine. Above was the majestic bullcon, sailing rapidly aloft, its immates waving their flags in triumph; below was the gaily-dressed multitude, mixing their acclamations with the music of the band, and chapping their hands to the adventurous voyagers, little dreaming that the death-hour of the principal actor in the scene was rapidly approaching. The ballson, with the parachute, were visible for several minutes, passing directly over the Thomes, and apparently taking the direction of Bayawater and Acton. Shortly afterwards they appeared to enter a cloud, and became lost to sight. The company began to separate, and, mingling with the crowds congregated around and in every avenue leading to the Gardena, formed a tableer monat of high life and low life in not unfrequently amusing juxtaposition. All, neverth-low, seemed hieing honewards, impressed with different notions of the result; but the prevailing opinion, particularly amongst the humbler classes, appeared to be that some accident or misfortune would occur. We grieve at being compelled to turn from this scene of amusement and mirth, and record the disastrons conclusion,

Mr. It Tuderwood, of Engestarters, followed on how-look in the direction taken by the hallows, to winner, if possible, the descript of the parameter, and firm that gentlemen are have been either inchesholy destin which follow. Mr. Tuderwood was in the neighborhood of Backbondt when he saw the Mosses, Green were the cent which stateded the papershets in their cent. The parameter, the halt to Back description with the ansates required with a trade to applicate the same of the parameter. The same of the same from the parameter, and Mr. Celving parameters are from a high safe of seven banded feet. Mr. Culerwood insanching when the same is a fifted near 1 feet as find the same is the same from the same in the

A virte in a mering paper asys—" I was looking at the balloos with the parachase as it defined soully before a grate which and now very showly. After it was that planted out tour the parachast aswend to find without any oscillation, and to long prepositionary under the balloos. Shortly observated the balloon limit was sufficiently subsided, and was brinked considerably meets one office that when life first was lead the parachast disk and explicitly against and was brinked considerably more to most limit when life first with an explicate parachast contains a subsiderable of the parachast and the parachast disk and extrains of all with a nonewhat grower velocity than the one it was leaving the balloon and purchast adjunct themselves into their first posities, and finded with as a story and as grades a section as before. I as a limited districted I observed the balloon absording spaceaks with great velocity, and the parachasts, which had been confidently appeared from it, falling with pure parally! The stight of the balloon, and up eve was find on the parachaste. Knowing the nose and object of a parachast, I was struck with the grave when they are also considered to the contract of the state of the structure of the state of perceptible influence in turning it from its perpendicular direction; and where I stood, perhaps about six hundred yards from where it alighted, the air did not move the leaves of an elm-tree. For a few moments the parachate descended so beautifully, and preserved its position so steadily, notwithstanding its fearful motion, that I thought it would reach the ground in safety; and I felt relieved from an intense momentary excitement, from an apprehension flashing across my mind, that perhaps some human being was perilling life itself in the experiment. Being ignorant of the real form of the parachute, I speak of it as it appeared from a distance. To my eye it had a round flattish shape, and at this moment it seemed to lean a little to one side : it was not horizontal. It remained for a moment or two in this position, all the while it was descending rapidly. It then fell, as it were, to the opposite side, but with a quicker motion than when it first lost its horizontal position. It now oscillated several times quickly. A sort of flapping motion was then perceptible, and the parachute appeared lessened in diameter. It then apparently turned over, and at this moment something fell out of it at a great height, which, for the instant I could keep it in sight, did not fall much faster than the parachute. The parachute again turned over, and, to use and some others standing near, it disappeared for the twinkling of an eye, and in the sacceeding instant it was seen to have changed its flattish circular form to that of a long body, like an umbrella partially opened, or more correctly, perhaps, to a bullown very much collapsed, and descending with a great velocity. Some trees intervening prevented my further observation. I made my way through the fields in the direction in which I had seen it falling, and as I reached a spot at a little distance from where it fell I saw the lifeless body of the unfortunate gentleman piaced on a hurdle, to be conveyed by some farm labourers to an inn at Lec."

#### Mr. Green's Account

"In consequence of the set and faul construction which has beliefen the law In Cocking, I feel appeal collection appear to commissions to the public the whole of the particulates of you canel with the Variable Islance, being we will see Mr. Cecking in his practicut. The inflation common deal about twelve, under the side direction of Mr. Belations, the employee to the Landes for Kruppay, and see complete by the Voicle. First to the R. Belation of the Cocking Islance is the Cocking Islance islance is the Cocking Islance islanded by explain to only with a state of construction of the Cocking Islance islance is the Cocking Islance islance is the Cocking Islance islance islance is the Cocking Islance islance is the Cocking Islance

The countries between the bills on and paracheter was at length completed by the rape of the latter being made for the third limit on by which Mr. Celebrary was to the billsoof flow the balloon. It is the prince to myself the I bolds billsow, not be grown of the billsoof flow in the billson, when the promotion extra consideration, that I pillson when the prachete from the bulbson, much negative, etting asked my other consideration, that I pillson develor measure for the severance when Mr. Celebrary was not abspective proposed or ready for his blacesart, and therefore if any accelerat were to access to his, that I, of course, double by regarded as the repossible party, and the one to whom billson would instantly attach Mr. E Cry, encrything being in readinose, about twenty from minutes to right o'clebr, gave the signal for the whole of the apparatus to the related from its translate, and we instantly not very smallery, black gas an eastry owner, the signal of the related from the bulbers, and we consider the accessibility that proposed to detech kinnelf from the bulbers, and to enumerate his develor. I rading thereof the constant of a big origining twenty promise through the truth already house. At this product were flower than the constant of a big origining twenty promise through the truth already bursed. This proving of tilts a wall, I directed a second and then a talk length to be great of by the warms means. At this product we warm facing mandy over the Serray Zodopiel Gardons at an elevation of short 2000 feet, II was at this moment that a period or the lower of the bulbed-tole becomes detached, a crimentance which was counted to the latest with was once which was counted when the contract of the latest the bounds exheated, a crimentance which was counted to the latest which was once which was counted to the latest which was once which was counted to the latest which was once which was counted to the contract of the latest the bounds exheated a crimentance which was counted to the contract of the latest th

the occasional swinging to and fro of the parachate. This accident led to the inconvenience which I had forescen some days before the ascent, and which led to the adoption of the tube, and of that of rendering it extremely difficult for us to discharge the ballast without its falling into the parachute. Our imbility to do this, as we were then situated, I communicated to Mr. Cocking, adding that, under the circumstances, it was impossible for us to rise any higher unless we were to attempt to throw the ballast in bugs beyond the outer spread of his machine -- a course of procedure which we considered to be attended with much danger to any persons who might chance to be beneath -but that we would, if he wished it, make the experiment as soon as we had cleared the houses. Mr. Cocking replied, 'Very well; it is of no consequence, if you think I have time to rise as high as I want, and to descend before dark.' I remarked, 'I think you have, and you will then also have a more open country for the designst.' We now continued to glide along, guided by the pleasure of the wind, at nearly the same elevation, until we had cheared all the buildings. During this time Mr. Spencer and myself were busily sugged in dividing our ballast into small percels, so that we might be able to throw them over without injury to the parachute. As seen as we found that we had arrived over the fields, and presuming that no danger could arise from the falling of the ballast, we quickly began to relieve correlves of that essential essentedity. In doing this, our anxiety respecting any of it lodging in the paraclinte was much relieved by finding that that machine continually swung backwards and forwards, evidently occasioned by the operation of the currents through which we passed, so that we were enabled, without any difficulty, to cast away the bags without damage to the vehicle immediately below us. We continued to discharge ballast until we had lessened our quantity by fifty pounds, in addition to that already sent over. The balloon now began to rise, and soon entered a tier of clouds, when we lost eight of the earth. So great, however, was the resistance offered by the parachete to this denser atmosphere, that we were again obliged, in order to attain the elevation Mr. Cocking pressed for (that gentleman considering that the greater the distance he had to fall the greater would be the atmospheric pressure under the parachate, and, therefore, the easier his descent), to rid ourselves of four hundred pounds more ballast, and even then we only arrived at the height of 5000 feet, which is a trifle less than a mile. We were still 3000 feet lower than Mr. Cocking's desired elevation. Whilst these operations were going on Mr. Spencer and myself held a conversation with our appended neighbour and friend, which was entirely confined to the progress we were making upwards, Mr. Cocking manifesting much anxiety and wishing to be informed how we were rising, requesting to know when every additional elevation of five hundred feet was accomplished. As soon as we had attained the height of 5000 feet I told him that it would be impossible for us to get up as high as he desired in sufficient time for him to descend by the light of day. I pon this Mr. Cocking mid. 'Then I shall very soon leave you; but tell me whereabouts I am.' Mr. Spencer, who had a few minutes before caught a glimpae of the earth, answered, 'We appear to be on a level with Greenwich.' I then asked him if he felt himself quite comfortable, and whether he found that the practical trial bore out the calculations he had made. Mr. Cocking replied, 'Yes; I never felt more comfortable or more delighted in my life.' Shortly afterwards Mr. Cocking said, 'Well, now I think I shall leave you.' I answered, 'I wish you a very good night and a safe descent, if you are determined to make it, and not to use the tackle.' I should here observe, that with an anxiety to prevent any accident arising in the event of the violence of the wind rendering it issuessible for a descent to be attempted, an apparatus had been constructed, ander the direction of Mr. F. Gye, to afford us the facility of assisting Mr. Cocking to hand himself up into the car of the balloon, and that this is the tackle to which I thus alluded. Mr. Cocking to this question made no other reply than 'Good night, Spencer; good night, Green.' At this instant I desired Mr. Spencer to take fast hold of the ropes, and, like myself, to crouch down in the car. In consequence of being compelled to keep hold of the valve-line, of course I had but one hand which was available for the purposes of safety. With that hand, fortunately, in the perilous situation into which we were speedily thrown, I was able to maintain my position. Scarcely were these words attered before we felt a slight jork upon the liberating iron, but quickly discovered, from not having changed our elevation, that Mr. Cocking had failed in his attempt to free himself. Another but more powerful jork ensued, and in an instant the balloon shot upwards with the relocity of a skyrocket. The effect upon us at this moment is almost beyond description. The immense machine which suspended us between 'heaven and earth,' whilst it appeared to be forced upwards with terrific violence and rapidity through unknown and untravelled regions, amidst the howlings of a fearful hurricane, rolled about as though revelling in a freedom for which it had long struggled, but of which until that moment it had been kept in utter ignorance. It at length, as if somewhat fatigued by its exertions, gradually assumed the motions of a snake working its way with astonishing speed towards a given object. During this frightful operation the gas was racking in terrests from the upper and lower values, but more particularly from the latter, as the density of the three picts which we were forcing or purpose presents observing an enhance in the per of the hallows as to admit of comparatively lear a small escape by the aperture. At this junction, had it not been for the opposituation nor most of two papers solid guide and an loye by the different means, have shared the nearboards faster of the period of t

powers were encoursed, in a state of total darktoon for four or five minutes.

"As soon as we had perfully regularly the new of our iver, and had somewhat procured from the effect of the shortest." I not discovered their governed had not not necessary to the length of time I had been likewise give governed by a regular discovered had not not necessary to the length of time I had been likewise give not successful the season such consideration in complexion in the hard had not not believe, knowing the contentry rate at which they makes it coupse, takes into consideration in complexion, which had not be believe, knowing the contentry rate at which they had been the best 2000 for et al. (as a proposal of the size of the value of the size of the value of the size of the value is considered, that it approach of the size of the value is considered, that it is not to the value of the size of the value of the valu

The same cause also forced an extraordinary easissism from the opening at the neck, and I am decidedly of oninion, had it not fortugately hopemed that the proprietors permitted this latter valve to be increased from eighteen to twenty-five inches in diameter, that the bulloos must have burst, and my compasion as well as myself been hurled headlong into eternity. As I have stated, we were now rapidly on the descent, having get rid of all the usual sanovance to which I have referred; and finding that we were proceeding downwards with the ordinary estimates and steadiness, although with much speed, we hastened to empty two vessels of water which we had taken up for the purpose, and to charge them with the atmospheric air through which we were then descending. Our desire was to effect this object at our greatest altitude, but, from the circumstances which I have detailed, we were unable to accomplish that end, and when the vessels were filled the mercury in the barometer had ascended to 17-50, or an elevation of 16,632 feet, about three miles. When we had accomplished this matter, finding ourselves suffering severely from cold, we referred to the thermometer, which stood at 28, or four degrees below the freezing-point. We were at this period apparently about two sailes and a half above an immense meantain of clouds, which presented the appearance of impenetrable masses of dark marble, whilst all around us was shed the brilliant rays of the setting sun. We continued to descend with great rapidity, and as we approached the clouds that velocity considerably increased. At this time so large had been our loss of gas, that the balloon, instead of presenting to our eight its customary rotund and widelyexpanded form, now merely looked like a comparatively small parachate or half done, without any aporture in its centre. We had parted with at least one-third of our gas, and were as far beneath the balloon itself as fifty or sixty feet. Recollecting the late hour at which we quitted Vanzhall, I now began to be asxious about the time. and, on applying to Mr. Spencer, ascertained that it wanted not more than a quarter to nine o'clock. From this l was aware, notwithstanding in our then position we were blessed with a magnificent light, that on emerging below from the clouds darkness would have assumed her sable hus over the earth, and that we should have much difficulty, therefore, in ascertaining the nature and character of the country, supposing us to be over the land, on which we must effect our final descent. I consequently became extremely anxious to make our way through the clouds as quickly as possible; which having done, we proceeded until we had reached within some three hundred feet of the ground, when we found it requisite, from our inability to ascertain the nature of the ground, the whole country beneath as offering the appearance of thick woods, to cast out every article of ballast and moveable mattern, even to ropes and empty ballast-lags, in order to prevent us from coming in contact with what was supposed to be trees. After calling out for some time, and hanging out the grapped, we heard voices in reply, and the parties speedily drew us to a safe place of landing, which proved to be close to the village of Offham, near Town Malling, seven miles west of Maidstone, and twenty-eight from London. The balloon was packed, and conveyed in a cart to Town Malling. where we were most hospitably treated, and provided with beds by the Rev. Mr. Money, who, singular to relate. informed me that he is the son of Major Money, the acronaut, who, on the 23rd of July, 1783, ascended from Norwich, and fell into the sea twenty miles off Lowestoff. At half-past ten o'clock this morning we quitted Town Malling, and it was not until our arrival at Wrotham, at which place I inquired whether they had heard where-Mr. Cocking had descended, that I became acquainted with the unexpected and melancholy result of his experiment. I trust it is needless for me to say how deeply the feelings of Mr. Spencer and myself were harrowed up by the sad intelligence thus conveyed to us. It is only due to the late Mr. Cocking I should add, that throughout the whole of our voyage, up to the moment when he released himself from the balloon, he displayed the greatest courage and fortitude; and the expression of his features, and the light and joyous, although carnest, way in which he made his inquiries and conversed with us, manifested his great satisfaction that at length a theory to which he had devoted the last twenty-five years of his life was about to be triumphantly put to the test. We were un about one hour and twenty minutes. Individually, my spinion was, that, having withstood the difficulties and severe pressure of the atmosphere in its ascent, Mr. Cocking's parachate would accomplish its descent with perfect safety,"

In reference to this unhappy event, Mr. Wise, of America, several years after, expresses himself thus:—

Looking at this contrinuous with an unprejudiced yes, it struck no as remarkally inguistice, exhveing nonbut true principle, analytic to the end for which it was intractly at also confirmed well in this conclusion onbut true principle, analytic to the end for which it was intractly at also confirmed well in this conclusion, on any rely that I would not have becitated to repeat the experiment with a similar machine, with no other alternation. In waste of the interest of the end of all times, as well not become as well not include it. I wasterned the opinion is a Brilladelphia newspaper at the time, and promised to demonstrate that truth, before the summer should pass by by the experiment with at true model of this new reversets in its letting down, from a great being it, a letting attains.

On the 18th September Laccorded from Fhiladelphia with both a Garactic and Cocking paradestes stateds. In the former 11th algorial dag, and in the intere as at. The concess paradestes was fine disperal, which is recovered afferment to continue with part violence, to which the dag to ecceptat gave the most ample to tender to the continue yie sy riph, excreposaling to each visition, as far as I could have him. Seeing it safely in the hands of some individuals below, the convex paradeste was next put to the test. I must particular preparation to work in twice between visits as any gade for the consense. When it was deeped in occillated with life of a per measure and time re-measured describing spind orients of prelaps a bundered feet diameter (this is a mere given orientation, because of the continue of th

Mr. Wise adds that, even with the defect in the upper hoop, that caused his parachute to collapse, Mr. Cocking would have descended without very serious consequences, by the friction of this vast surface through the atmosphere in a collapsed state, had be not lost his presence of mind, which caused him to receive the shock all at once,

I conclude this chapter with a relation of some other ascents made in America, by the same experienced aeronaut. The first took place in the presence of certain delegations of Indian tribes who were in Philadelphia.

In October, 1837, every arrangement being completed the Indiana with the celebrated chiefe Black Hawk.

and Keckuk the Prophet, and Black Hawk's son at their head, and the Florida soldiers, tegether with a numerous company of invited guests, being assembled for the occasion, at a few minutes after one o'clock, preparations for a start were made. Just at this moment the chief Keekuk, with the characteristic angueity of the red man, requested me, through his interpreter, to allow him to make an examination of the whole machinery and apparatus. To this I cheerfully assented, offering at the same time to give him such explanations as he desired. It was evident from the manner of his procedure that he had some doubts as to the fairness and reality of what was to be done, apparently thinking that it was a sort of a juggle to be played upon them by a "pule-faced medicise max." Everything in the car was observed and scrutinised by him with a keenness that would have done credit to a philosopher, (Indeed, I looked man him as a great satural philosopher.) A large brass speaking-trumpet that lay in my car elicited from him particular inquiry. Having just before told him that I would sail above the clouds, he asked me whom I intended to talk to there with this instrument. I told him it was intended to talk down, not np. He also inquired the particular use of the grappling-iron and the philosophical instruments contained in the ear; the use of the latter he could not satisfactorily commedend. He next asked permission to make a test of the success power of the balloon, which was promptly granted him; several of the cords by which the machine was held down were brought together and placed in his hands. Upon these he gradually brought his weight, at the same time scrutinising the others that were fast to weights, whereupon he nodded assent and belief in its powers, and at once acknowledged an abandonment of his accepticism upon the affair. Black Hawk, who until then had maintained a sullen silence and apparent unconcern of the whole affair, called me to him and informed me that this affair was very interesting to his companions, but that he had seen such things before. This was the truth; for some years before he witnessed, in company with General Jackson, who was then President of the United States, an ascension from the Battery in New York. The Prophet and young Black Hawk listened and observed very attentively to all that passed, but made no inquiries, being apparently satisfied with what they heard.

This investigation being get through with, I shock hands, so a farwedl, with the chiefs, and started off. Mt to moment of staching the balloon its Indian all simultaneously peragon their feet and gave a wave of the hard, with a faint but shrill strick, which I took as a parting salute, and responded to it in a similar manner as nearly as I could.

It is noticed on this coversion, while creming the Deleverse Hiver at the height of a mile, that the water approach much nece transperse when viewed from a beats, and all neight than when viewed from a beats, and he remarks the work flow a beats or from its beats. And a remarks were the presentant and the production of the triver in the vicinity of the remarks of the plant of covering. After 1 had creased the recept the blant production of the triver in the vicinity of the height of covering. After 1 had creased the recept the blants covering mostly of and, melificial bullate was discharged as raise for troot feet high, when her course become due used, with a speed on moderate, that it was only by the change of the proprietal converge that I could discure the covered progress. The day was a remarkably pleasant one for the batteres of the means, and of it this innorme height the thormoster ranged at 40°°. It is man, however, the contract of the

It enjoyed a range of vision from ninety to one humbot miles in diameter. Seeing that Philadelphia's was now regging into the worter hories, and that has beaut Holly and Viscous Trom were possing bound her in the near discretion, and himstigs that towards the ani searchy applying but forest and as could now be expected, I one observed me in this choice was the contact of a whiterist, which are everyly dist which makes in a choice of both contented me in this choice was the contact of a whiterist, which has aware placed for a landster in a choice of both contented me in this choice was the contact of a whiterist, which has aware, about for a mixing in a choice of both contented me in the state of the content of the co

horing, welling in boxes, as it was, up into the blue suited blewes, it below to me like to much risk for the advantage likely to be gained by a bossilier on the books and. Conceptually determined to make a descent in the pinn, which was accomplished at half-past four elected. The descent was made with considerable force; but the trues were so does not not that that the tablon did not still down between until all we such flit distanced as her gas. Baring below my descent larget on eye to the accounty of fooling my way out of the forces, I robbid up that allow, attracted in in the sex, and then starte, to the search for a roal I had abserted, which I some natural, I also not some huntonous, who sated no in carrying the machinery to Burn's force-mill, which is thirty-eight miles from Canado and absort farty from when I justed.

## 1838.—The next ascent was at Easton, Pennsylvania.

a.d. 1838.

This prepared, and the 11th of August, the day for the ascension, being at hand, nothing remained but to go as with the experiment. The day was fine in the meeting, but at most the horsens indirected an approaching thanderstorm, which, by ten minutes before two circles, passed over with no other injury than the wetting of the network of the halloon and the dispersal of a perties of the audience, who, for a brief space of time, were driven to below of sheller.

At a few minutes before two o'clock the balloon was detached from terra-firms. I laid with me two parachates containing animals—one a cut, the other a dog; and as the billion approached a dense budy of black thunderclouds, some vivid flashes of lightning, accompanied by violent peals of thunder, greeted my upward passage. This gave the first part of my voyage a terrific, but grand and imposing appearance. It seemed to me as though heaven's artiflery were celebrating the secusion as a preserves of the new-horn science, and it inspired me with a determination to try the new experiment of atmospheric resistance as a means of safe descent in the event of explosion of the balloon at great heights. As soon as an altitude of about 2000 feet was attained, the conical name bate, with its occupant (this was one on Cocking's plan), was detached, which landed in safety near Lafayette College, at the head of the town. Soon after this the balloon attained an altitude of about 4000 feet, at which point the oiled-silk parachate, with its occapant, was detached. This was to foreshadow the effect of the experiment of exploding the balloon, and was so contrived as to have an apparent disadvantage compared with that of the large machine. This small one was nothing more than a bulloon in a collapsed state. When thrown overheard it fell some distance before it expanded completely, and after it had expanded it fell with a very irregular vibratory motion, which was not the case with the other one. Upon this I concluded, however, that the experiment would not be hazardous, if not disagrecable. I was also neutred, from my experience, that a bulloun in a flaccid state, or only partly so, would invert, that is, the lower part cave into the upper part, and assume a benispherical shape in a rapid descent.

When an altitude of about 13,000 feet was attained, the hallown because forfully expanded—to its tensor transion, and, having that an inde-dissource to its in the next, the up to be pass to insect through the circles with concidentals mains. I would here observe, however, that any alight sensel, occurring in so perfectly quiet a place as in that of a hallow an alice of two shows the event, hash superpared by gast ranks. At this privile of the veryesge it was evident that takes gas were specifyl at off, the ballown must breat from expansion; for darwas still rings and the the circles where it is superpared to the contract of the contract of the circles of t

At this critical amount I became somewhat critical, and at I baded over the side of any or I deserved the specifing corrections of highining springing from cloud to cloud a null beneath, no as the thumbersom supposing in but remainst helow. The stem was nowing from SW. to XL and the balloon was silling from XW. and the stem of t upper; it had fallen, condensing the column of air upon which it was falling, until it had arrived at a point where it was so dense that the force of the whole weight pressing down on it was arrested, which cansed the parachate to tilt over. The weight of the car, however, countervailed the tilting tendency, giving it an oscillating metion, which it retained until it reached the earth. The velocities of these zigzag descents were marked by corresponding notes of the wind as it whistled through the rigging of the balloon. On reaching the point where the lower current of air traversed the upper, another and more violent shock than the first was the result. From this point the oscillations became more severe, each one causing a somation in me similar to that which a person experiences when dreaming that he is falling

The wind from the S.W. drifted the machine several miles in its direction before it fell to the earth. As I neared from from, all the ballast was thrown overboard; but when I struck, it was with a violent concussion, for the machine was just then at its maximum velocity of descent. The oar struck the earth obliquely, and I was thrown about ten feet forward from it. The ball-on had fallen alongside of no, and so complete was the cellapse where the lower part had doubted into the upper, that it was with difficulty separated again. The car had turned bottom upwards, and there I stood congratulating myself on the result of this exciting experiment-the perspiration redling down my forchead in profusion, for the atmosphere below felt oppressive. The landing was made on the farm of Mr. Elijah Warne, about ten miles from Easton. Before many minutes had elapsed after this descent, I had resolved to repeat the experiment in Philadelphia at the first opportunity.

On my return to Easton, the day after the assension I received the following letter:---

"MR. West, Master of the Aerial.

" New Yillage, August 11th, 1838. "I hereby certify that my first sight of your air-ship was north of Henry Snyder's; it then apparently passed not far from William Kinney's, then directly between the inhabitants of New Village and the sun. We saw the gas rushing from the balloon like the steam from a boiler; it created between us and the sun the colours of a rainbow, and it was some time before we got a second sight, when you appeared to be lowering. As the size of the balloon became larger, we could discover a black spot underneath, about twenty feet. I pursued on foot until I saw you slight near Thomas Thutcher's.

" From your most affectionate, but not acquainted Friend,

" X.B .- And others."

" Witten Sprew

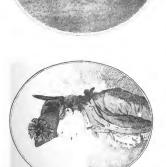
a.d. 1838.

From this it appears that spectators on the earth could not see the balloon at the time it was falling during the collapse. Its descent for the first few seconds must have been faster than at any other period of its fall, and during that time it affected me more, too, for the sensation caused a diamness of sight, and I closed my eyes momentarily from the effect.

## First Ascent from Allentown :-

On the 8th of September, 1838, I made an accusion from Allentown, Pa. I had resolved, after this onwas accomplished, to go to Philadelphia and repeat the experiment of exploding the balloon at a great height in the air. The Allentown ascension was a very complete one. The following extract from the journal, always kept during my ascensions, embraces the most interesting features connected with that trip :-

The balloon was now perfectly stationary over the outskirt of the town. I next concluded on starting a fresh interest to the spectators below. Having all the ballast bags filled with dust, several of them were emptied overloard, which for a moment enveloped the balloon in an artificial cloud, which presented a very interesting phenomenon to the lookers-on. This sent the balloon up about two thousand feet more, approaching at the same time a solitary cloud. As I passed the angle of reflection of this cloud a very sensible heat was felt, showing clouds to be good reflectors of heat, as they are of light. When the balloon got in proximity to the cloud it became somewhat agitated, making rotations one way, then another; at the same time the cloud apparently receded from the balloon. as by repulsion. Here several more bags of dust were discharged, which clung much more to the balloon than did the former; even the heavier particles were now attracted to the surface of it and remained there some moments. When the machine had risen considerably above this point the dust fell from it in a cloud. This was a very interesting part of the voyage, and convinced me that the sciences of electricity and meteorology would be much improved by the aid of balloons.



A STATE OF THE STA

Having arrived as Thildelphia in the north of September, immediately following any experiments at Entand Allenton, I consulted several selecting greateness upon any instants to in amountee that I would halso an assention, and explode the hallow when over a radie high. Although they did not seven to doubt the philosophy of atmospheric revisions, one the theory of converting the hallows into a parenthe, still, they not extremely almost the dismoster from my instantion, as they considered it is risk of life. Could they have persuaded use with half the hillowedge angular it that I had contently table for it it would have be have been of the philosophy and the substitute of the philosophy and the successful of the philosophy and the successful of the philosophy and have have been strengthed by my.

Feeling convinced that all was right, an announcement was made that such an experiment would be made on the 1st of Crebote, 1828, from the corner of Seventh and Callowhall Streets. The day was remarkably fine one, and the balloon neved in five different directions during her flight. The editorial notices of five principal newspaces of Flaidschie will be first given, before 1 hald given year one second of it.

int: "Mr. Wise membed systemly afternoon, at half-past four c'elock, with his hallon. The sky was perfectly does, and the baltons posed oblogy to the methwest; in about teresty mismons the rich blow of the however was marked with a thin filtery which, which was the gas comping from the top of the ballon. At few circle, and for half and however, we started and oblinance from the rich; the hallons for the wast, which remainds much larger plants proving, see that of high. The was removed by the rays of the same. The relations was the result of the removed of the removal of

2nd. "Mr. Who youten'sy afternoon, as per notice, mode an ascension in his parachate balloon, in the handsomest possible style. There was scarcely a breath of air stirring, and he row almost perpendicularly to a great height, and was out of view at the writing of this paragraph, having been up about an hour. He went up

without any difficulty—how he gets down we'll tell to-morrow."

3rd, "Mr. Wise, the aeromant, made a successful securior on Monday. The balloon passed over the Schuylkill, and Mr. Wise eventually decorded, according to his promise, by letting of the gas gendrally at an extreme height it by assume of a cord and pulley be converted the balloon into a perachate, and thus cause down. It was a note fearful undertaking, and was anticipated by competent scientific authority as calculated to carry with it destruction of life.

the "Mr. Wise mode, yesterlay afternoon, one of the most bountful secunious that l'Balledphia cure witnessed. About highput for he leit 'et disacter cartil, and like a survey from, we distraight out for a leit 'et dispersation and the survey from a verification of the widne, cherent in his upward light by the shoats of the dense mass which filled the neighbouring streets. At six which have been supported by the street of the survey of the previous of the survey of the street of the survey of the previous of the dense than the survey of the previous of disagrants selectricates in such a fairing street, At one time that he could may the yound the previous of disagrants selectricates in such a fairing street, At one time that he could may the yound the previous disagrants of the survey of the heliton, which was considerably depressed, and shillifed a trensions institute, gave if the solvent and previous of the survey of the heliton, which was considerably depressed, and shillifed a trensions institute, gave if the spectrum of the survey of the heliton, which was considerably depressed, and shillifed a trensions institute, gave if the spectrum of the survey of the heliton, which was considerably depressed, and shillifed a trensions institute, gave if the spectrum of the survey of the sur

5th. "Mr. Wise's ascension yesterday afternoon from the enclosure, corner of Seventh and Callowhill Streets, was one of the most beautiful we over saw. We did not witness the process of inflation, as at the time of our entering the enclosure, half-past four o'clock, the pipes communicating the gas to the balloon had been withdrawn, and the acronaut having entered the car, was arranging his cords and other fixtures. This was speedily accomplished, and at twenty-two minutes before five o'clock, the cord which confined the voyager to the earth was cut by Mr. Wise, and bidding the assembled thousands 'good-bys,' he soared aloft almost perpendicularly, though bearing a little south for some twenty minutes; after which, at a bright of some several thousand feet, a different current of air wafted him to the north, until he was brought to a position almost directly perpendicular to the place of starting. At this attitude he encountered another current of air, by which he was rapidly carried in a west-bynorth direction for several minutes, when a small cloud of gas was suddenly discovered to have issued from the halleen, and soon after another of about the same quantity; after which the object of attention seemed gradually to descend for a short time, until it had arrived at an atmosphere of sufficient density to exactly weigh it. It now pursued the even tenour of its way in a direct course, W.N.W., until nearly out of sight from the enclosure, when, at about half-past five o'clock, the halloon seemed suddenly converted into a purachate, and commenced a rapid descent. We watched its descent with a spyglass, until so low that the buildings hid it from our view, my at an angle of some ten or Iwelve degrees from the horizon. We know not at what distance from the starting-point the descent

2 A 2

was made, but should judge it to have been several utiles. We hope, at least, that the intrepid voyager reached the curth in safety, though we had some fears from the apparent rapidity of his descent."

Such were the notion of some of the public journals of the sky. They all last one agree as to the convenien of the ballout into a parachus, and that one are it at the time it was forming into own is also, when he perceived the objections in its lower part. In this but arrangement I had a public fined into the valve disc, on the inside of the balloux, through which as core journal, whose one cal was factored to the lower part for the balloux, principle the shores up that the part of the ordering and the same part of the contribution of the same part of the s

As the machine was descending the lower port, one-third the length of the whole balloon, hung loosely in the network, swinging to and five, and consistantly presed upward slightly by the current of air. The resistance of the machine against the atmosphere acted on the principle of the inclined plane, sliding obliquely down over it, dewrilling spiral circles, until it struck the earth.

Silve this experiment, believes have exploid which accounts have been shift with them, and is no instance have their pressure has excited principle. The error proceeping and principleal accounts of them down a mileuchine eccapys. And the minche is always in the height from which the machine falls to the earth, the resistance that the antispeder must present to being never healthy belten intraceounts. We might as well call the resistance that the antispeder must present to being never healthy belten intraceounts. We might as well can be also the single and the single and

This is a principle in acronauties which has never yet been duly considered, although a very ingrains mathematical deduction upon the descent of pure-burbs has been given in this work. Metoerabejaral and astronomical deductions are yet mech to be facilitated by the science and practice of normantics. There are things in its philosophy that men have not yet dramated of. There are sublimities in its practice that the world has not yet been fully prepared to realise.

Although the principle of atmospheric resistance is a effectivent thing, and its application to a safe descent from great heights has been demonstrated, there are yet very few persons who are willing to believe it so well established as to entitle it to be practiced with impunity.

## 1839.—Second Ascent from Allentown :-

In the spring of 1892 I was farfed to make another assention from Allestown, Fix, which was really screpted. The assention was made on the 27th of April, at short two clocks it in the farmon, and the following extracts from the high-toke of the trip will be found interesting:—At twenty-free minutes part two clocks are very considered real properties of the another the colors, and the correct changing from E. to 885. He theremosters extending at 397. This temperature slit tuplesantly seld; my core began to help at the first transport by a creating, may measured in you who haps to blood, and first vary made distanced for a for minutes. The bollows become repitally distribed, and highly electrical, and an eyes such of and lying in the cur showed extract principles of the parties of it being dreaven my quastion the bolloon, from which it would deep deep space, being up this material for ever a mixtue. When the bolloon from which it would deep deep space, being up this material for ever a mixtue. When the bolloon is it the such that past is it was of a milky standard principle and the such as the color of the past was principled by the such protectly measurement. While this change of color in the past was ging use, if you out water, which dropped freely from the lower sufficor the bolloon, and it is consistent actuage alphasons shorts. Seen powerful electrical effort must here recolleded these phenomena, and I always found strong electrical offsets when passing from one current of air into

anomer.

On this occasion the wind was very strong when I descended, which was forty-two miles from Allentown;
and having the explosive apparatus in the balloon, and failing in the first landing to got a held with the grappling-

iron, I found it very convenient to explode the machine the second time it touched the earth.

On my return is Allendown, the citizen of thet place acrossed a dain to have a third scenation. This was made on the last Statesof of May, 1887; and as it was stateded by elementatons for a which plenking at life in jougardy, as we'll as bringing into use a node of coming the hallows to descond which would seen producted, as soons of it will be been given. At the time is happened up perfusive around the time consumes of the consumes of the original to the original consumers of the consumers of the original to the produce of the original consumers of the consumers of the original to the original consumers of the consumers of the original consumers of the consumers of the original consumers of the original consumers of the original consumers of the consumers or the original consumers or the consumers of the original consumers or the consumers of the original consumers or the original consumers or the consumers of the original consumers or tha

At helipast two oldest in the afternoon, everything being in mulsions to detask the halloon from the infiniting appearant one propose first the source and just at the time at the west all convenibles, and nothing mentioning the best of the source of the source of the halloon, where it generally remains desirg the halloon, where it is possible to desire the source of the halloon, where it generally remains desirg the halloon are given in the convenience of the source of the source of the halloon are part of the collective pair and the convenience with him. It being in the next at the most, bulkoon was it in got the height of the next at the most, bulkoon was it in got the length of the next at the most, bulkoon was to have present a problem, and our for the problem of the source when the halloon is not be extended has not the earth the him and all other has problem on any most ingest there of the over which had he not the earth had no never the large to several, before the thought flashed on my mind that the valve-rope had not been accord. But it was not known to the contraction of the source of the source

I had with me a parachate containing an animal, and, knowing that the disposal of this would send me higher from the earth, I at first felt an inclination not to part with it; but upon reflection of its being announced to be done, and the people of course waiting for its descent, it was at once thrown overboard. I watched its progress until it reached the earth, when it was picked up by some men,-and oh, how I wished myself there, too! However, having over a hundred miles between me and the Atlantic Ocean, I felt hopes that something might be done in the interval that would enable me to get down. My first observation in view of this was to ascertain the velocity of the balloon in her castward course. This was found to be about fifty miles per hour, and coavinced me that the Atlantic was likely to be reached before the ascending power would give out, so as to let me down. I could not persuade myself that the balloon was in a load enough condition to meet such a hope, for it had just nudergone a therough repair, and was in good condition, -- a quality, in this instance, not very desirable. While thus meditating mon the bost means of effecting a descent, I found that already a great portion of Jersey had been traversed, as Princeton was not far a head of me. The current of wind below, just in the cloud region, was moving from the south-west, and the one the balloon was sailing in was from the north-west. To the north the atmosphere was clear; to the south it was charged with clouds. The lower current was carrying in it a thunder-gust, which presented a beautiful phenomenon. As I was over a mile above it, and four or five miles off, it gave me an opportunity to scrutinize its operations sidewise and above. The storm and the balloon were also moving towards the same point, so that I was continually nearing it, but so high above it that no danger was to be apprehended from its effects. The rain was pouring down from it, and made a noise like a mill-dam. The clouds were rolling over and against each other; the lightning flashing in zigzag flashes through them as long as their side-view was open to my sight. Presently, it was all overcast below me, the thunder rattling like small-arms without any of the rolling reverberations that are heard below. The most splendid part of this scene appeared just where the storm was passing some dense clouds that were moving in the upper current, that had recently made their appearance. Several times the surface of the lower stratum swelled up suddenly like a boiling caldron, which was immediately followed by the most brilliant shullition of sparkling cornecations. Twice it swelled up, or rather shot up, like an immense pyramid, which was also quickly followed by an evolution of promiscuous flashes, and then quickly disappeared again, as though it had dissolved. It was a magnificent sight; but, in recurring to my critical situation, its charms passed from my mind with its departure to the north of me.

As soon as the storm had passed off, which was in about fifteen minutes, the sky became clear to the south

and east. Princetor was some distance to the earth of me, and I was nowing nearly the cust. Less than an how sould now in the see so the Atlantic; it was alwayd in sight to the curried-cust and the east. The ablox, examingly, had be syc best say of the all which of the last beam. I had judicy of abilist to go up to it was consisted of contract and prince of a single and the second of a contract and prince of a contract and a contract a contract and a contract a contract and a contract a contract

The prond and boundless Atlantic was now distinctly seen swelling its mighty crest to the arched roof of heaven, in the east, dashing its angry foam into the face of the clouds. This aroused all my energy, all my fertility of mind. I had been endeavouring to solit say little flagstaff, in order to splice it and tie a renkuife to the end of it, with which to cut the balloon; but it would not answer. My next effort was to burst the balloon by violent jerking of the car-the explosive rope was not in the machine now-but this also failed, and only went to show how immensely strong a network and balloon really were. Now a new idea finehed on my mind-I can get down by guest up-and in another moment one bag of sand after the other went overboard, until half the ballisst was gone; the balloon was mounting rapidly -- the visible horizon was fast contracting -- the yawning Atlantic was thus shut out of view. The atmosphere grew extremely cold at the height I had now attained; but the excitement of the excusion kept me warm enough. The balloon was now completely distended; the gas was copiously discharging itself at the neck, which, having no tube in it, was now open in a circle of eighteen inches diameter. As the gas nsingled with the onter air it had the apparance of a white cloud. By violent jerks in the car, impulsive volumes were discharged from the neck, the balloon still rising. In ten minutes after I had commenced this the balloon had attained her maximum height, and immediately after beam to sink rapidly. The valve-roce in the mean time partly rolled out of the neck, so that I could reach it with the flagstaff; my peril was at an end, and I felt as happy as Archimedes, when he cried out, Eurala; and I really did cry out, "Victory! victory!" as the threatening Atlantic came to view by the rapid descent. The imageuse discharge of gas, and the rapid admixture of atmosphere and hydrogen within the balloon, consequent to the free connexion by the large opening of the neck, and a rapid descent, brought the machine down to the earth fast enough without the use of the valve-rope, which had now been brought within my reach. Although the peril of perishing on the ocean was now ended, and I was almost in contact with town from, the old proverh of "misfortunes never come single-handed" was yet to be roalized.

On mediag the earth, soy grapping-iren took effect in a Jerny farmer's peak-orbant, which is a shared a regree who was polisping in its next field as own to infect his bases, two beyes, and two dops not allow a few areas a perfect bellum amongst them. The herees may easy with the plough, surface the size of the season of the bays areasmed—the dops bellum and the bays areasmed—the agent by one of the season of the bays areasmed—the agent by one two to achieve. The season of the bays areasmed—the season of the bays areasmed—the season of the bays areasmed bellum and the bays areasmed bellum and the season of the bays areas, the polity were in a cluster—the nature of the domeits establing below the down of the bone, despite of he bays who were still envening. The call man next made his opporation, still using its hand, and in a significant or the season of the bays are season of the bay

Exacts's children cleave to earth-her fruit Decaying children dread decay. You wreath of point that leaves the vale And lessens in the morning my : Look, how, by mountain revalet, It lingers as it upward every, And clings to fern and especytoid act Along the green and drwy steeps: Clings to the intgrant kalmia, clings To precipious fraged with grass, Dark maples where the wood-thresh sings, And bowers of fractuat mention. Yet all in van-it passes still From bold to bold, it cannot star, And in the very beams that fill The world with glory, waster away, Till, parting from the mountain's brow,

It vanishes from human eye,



THE COAL STRATAL

And that which aprung of earth is now A nortion of the elections sky.—Hayayr.

They take very superdistic point who embessers to permade men that they are obliged whelly to despite its rest-is and attain is in a, ten with they themselves they have it field has to taken all the plants in forming, franking, and obliged this world, that they who were made by Him to live in it, should despite it; it will be well enough if they do not here it so monoclerately to specif a below Him to be made it.—Lond CLARETON.

Look, the world tempts our eye, And we would know it all. We map the starry sky, We mine this earthen bull,

We mine this earthen ball, We measure the sea-tides, we number the sm-sands. We scrutinize the dates Of long-past human things, The bounds of efficed states, The lives of deceased kings:

We search out dead men's words, and works of dead men's hands.

ARNOLD,

## CHAPTER VII.

### REMARKABLE ASCENTS FROM 1849 TO 1863.

Ins eissennen Loftmann Hängt mar der Adlet und knippf an das tiewolke die Welt. Hoch bernuf bis zu mit migt beines Wirsbes Geleder Den verlorenen Sehall osenschlieber Muhe und Lust. Lo? where the eagle, his calm wings underl'd, Loos-holting in the solitary als, Kniss to the want of loaven this ball—the world! And not a wind upon its rinken bears One breath that speaks of human joys and cares. Beawar Latress.

FIRST PROPOSITION TO CROSS THE ATLANTIC -- A DOUBLE BALLOON ASSENT -- "" THE WARRIE OF THE TALLETS REFLECTED" - EXPERIENCE SOMETIMES AT PAULT - A LADY'S DESCRIPTION - A WIND FROM WEST TO EAST CONSTANTLY FLOWING AT THE HEIGHT OF TWELVE THOUSAND FIRT - WHOM MONTGOLFIES IN GOOD REALTH AT ONE RUNDRED AND SEVEN YEARS - COLONEL JOHN M'CLIFLIAN OF CETTYSHURG - THE APRILE TRANSIT BILL - NAMING THE PLACE OF DESCRIPT-A TRANSATLANTIC PROJECT -- A PETITION TO THE U.S. CONGRESS -- MENRY CONWELL'S PIRST EXPERIMENTS -- MONS. DEPCE DELCCERT, THE EDITOR OF A PARISIAN JOURNAL - THE DANGES OF A SOLITARY ASSENT - THE \*AEROCTATE MAGAZINE - A GENTLEMAN OF EIGHTY-THREE YEARS AN-ENIS -- MR. GREEN'S SECOND PROPOSAL TO CROSS THE ATLANTIC THE LATEST NEWS FROM WIST CHESTER -- HOW TO CAPTURE THE CASTLE OF VERA CRUE -- ALBERT SMITE'S FIRST ANISYT, SECOND ASCENT, AND PERSONS DESCENT -- A VIEW OF NIAGARA -- A DESCENT ON LAKE TRUE -- CROSSING THE SLEWIG-RELETED FRONTIER -- TWO HUNDRED AND TEN MILES, THREE ROURS AND TEN MINUTES -- FROM MAR-SKILLES TO TUBIN ACROSS THE ALIS -THE DEATH OF LICCTINANT GALE - MR, AND MRS. GRAHAM GRAZING THE GREAT EXHIBITION, MEET WITH AN ACCIDENT IN ARLINGTON STREET -- MR. COUNTELL RETURNS FROM GERMANT - BENRY MAYBEW'S ASCENT - KNIGHT'S EXPERIMENTS AT BOMBAY - MR. CONWELL'S PROPOSITIONS DEFORE THE CRIMEAN WAR - TWO DUNDRED AND FIRST MILES, LONDON TO TAYDOOK IN FITE INCES - THE CRYSTAL PALACE COMPANT - THE MERTING OF THE BRITISH ASSOCIATION - MR, COLWELL'S ZEAL IS EQUALLED BY MR, GLABBIER'S, THE METEOGOLOGIST, AND MEMORIABLE ASCENTS FOLLOW -- THE HINGET OF SEVEN MILES IN ATTAINED -- ' THE TIMES' LEADING ARTICLE --- HR GLAISHER'S EMINT ASCENTS IN 1862 -- WINCHESTER TO HARROW IN SIXTY-SIX MINUTES --- "COASTING IN A BALLOON "- BRITISH ASSOCIATION ASCENT AT NEWCASTLE -- NADAR'S GÉANT -- PARIS TO HANOVER -- SEVEN HUNDRED AND FIFTY MILES, SEVENTEEN HOURS --- GOI DARD'S MONTGEFIERS --- ALRIAL NAVIGATION IN CHINA --- ASCENT AT PERIS 1306 - THE CHARGE AND ALL DEPLACE IN 1860 - METHODS FOR DEPARTMENT - PROPERTY OF THE WINTS - A TROUBLEY MOUNT NO LINES - OBSERTATIONS - DAILY TRANSMISSION OF METHODOLOGICAL OBSERTATIONS - MEANS AND INSTRUMENTS EMPLOYED BY THE CAPTAINS TO KNOW THE BAPIDITY OF MUTION AND THE DIRECTION TAKEN BY THE AEROSTAT -- THE INPROTEMENTS THAT MIGHT BE MADE BY A KNOWLEDGE OF ELECTRICITY -- PRINCIPLION OF THE CRIMES -- MY FIRST TOTAGE - THE ARRIAL TERMINUS OF FOU CHIEF - THE TOWING-PATH - DESCRIPTION OF THE ARROSTAT AND APPENDAGES - THE SEAT FOR THE WATCHER -- THE SEATS FOR TRAVILLERS -- WE TAKE OUR SEATS -- THE CENTRAL CARIN -- WE ARE WEIGHED -- WE ARE MOSTED -- OUR TACKLE IS ADJUSTED, AND WE LEAVE THE STATION -- TRAVELLING COM-PANIONS - THE PASTIME OF THE LADRE -- A CONSUMPTIVE MAX -- A COMMISCIAL TRAVELLER -- TWO OFFICERS OF THE IMPERIAL AFRIAL FLOTILLA-THE PROJECTED VOTAGE TO THE POLE-FRANKLIN'S OPINION-CHINISE AFRONAUTS FORBIJGEN TO COME TO EXEGUE --- A NOMEST OF ALARM -- IN THE CLOUDS --- THE STRIBEN AND THE MARKER --- CHINESE NATION FOR MAINTAINING AN ARROSTAT AT A GIVEN BESORT WITHOUT LOSS OF CAS OR BALLAST: THE SAME WAS SUGGESTED IN FRANCE IN 1783 - MANGUVERS FOR DESCRIPING - THE POSCIBILITY OF APPLYING STRAM TO THE OPERATION -- THE EXPERIMENT OF DIFFORD IN 1852 -- OUR ABBIVAL AT THE NANT-CHANG TERMINUS -- THE TOWNS CHARGOTS - THE BUILDING-YARD FOR THE CONTRECTION OF AEROSTATS - FAILURE OF LEXXX IN 1834 - BUREAUX DE RENSEIGNEMENTS --- OUR CENTERY.

1840.--This year Mr. Charles Green amounced his readiness to cross the Atlantic, and thus expresses himself with his usual calculation and forethought:--

It having been stated in several of the public journals that I had given it as any opinion that it would not to impossible to travers the Atlantic Occas in a hallow, and that in first I was artistly engaged in making arrangements to corry such a priped into a casestion. I have thought it advisable, so well for any own credit as for the uniformic of the public, to when I greatling a technology per period induction is no go course of the most futuring partness, to offer some capitanties of the sature of the views I solid suppert to have networked to point out the principal obstacles with which I should have a post-stand of acrosses. With this interest I shall proceed to point out the principal obstacles with which I should have to noticed in the attempt, applying to each the remotiles which I should be expected.

These obstacles, then (which, it may be as well to observe, are no more possible to the vergage in question has as being once of unusual extert and chartoin, paraturally divide themselves into two closers: thee, namely, which regard the maintenance of the power of the billion throughout the ported for which its services are likely to be required, and those which arise from the difficulty of accurating the proper direction of the course.

With respect to the first of these, the reader is most probably not unaware that, apart from the leakage of the balloon itself (which, howavor, when in perfect condition, is not axcessively material), a variety of circumstances attend its progress through the air by which, in ordinary cases, its power of sustaining itself becomes gradually impaired, and ultimately, of course, completely overcome. Of these one of the most formidable is the difficulty of making the balloon retain the same elevation in the atmosphere, and of avoiding those fluctuations in the level of its course by which it becomes subjected to the alternate exhaustion of gas by expansion, and consequent loss of ballast in order to furnish an equivalent dimunition of weight. The extent to which this condition of the art, exercised in the usual form, is capable of operating, will be more readily appreciated when we observe that, at an elevation of three thousand feet, the density of the atmosphere is nearly one-tenth less than at the immediate surface of the earth. The gas, therefore, expanding as it ascends, at that altituda occupies one-tenth more space than under its original pressure; a balloon, consequently, fully inflated at its quitting the ground must, ore if attain that elevation, part with such a proportion of its contents; and this, too, without taking into account any unfavourable change in the temperature by which it might, and probably would, be accompanied. To a balloon like that of Vauxhall Gardens, containing about 80,000 cubic feet, this loss would amount to 8000 feet. Now the average sustaining power of carburetted hydrogen, or coal gas, which I should employ on the occasion, is about thirty-six pounds weight for every thousand cubic feet; consequently the loss of power experienced in this slight ascent would be equal to 288 pounds; much more than would be lost by leakage from a good balloon kept inflated at the earth's surface in a week.

Again, at the approach of sight, sport the possage through cloude charged with resport, or under the inflatence of an horse or finis, a large quantity of ministers becauses subsorted by the histon satting and selver appearates, frequently in the extent of two or three banders length, reporting an immediate discharge of hishin to hand begins to be fift in ministers become descripted, and, there have been present the discharged hallow to that begins to be fift is ministers become descripted and, there have been most one of sellinger or recorning to discharged hallot, the bulbon, lightened of the temperary incombinates, repitify rices in the six, bor constant of go a parading in her corns, and redoring in the literation measures to prevent the overspectors we have been described. These although consoliting to operate man or has frequently fall that most in every twenty-durfred the six of the six of the constant of the six of the constant of the prevent, beaver configult print, and forcelly terminate her progress thought has it is not provided to the prevent, beaver capitally grant, and

Such are the principal causes which affect the continuous of serial vegages for any length of time, and the following in the many which layers or to contribute their inference. Amount the long to which, now reduced how, the string, which coras the heliton above and the cur understand are under fact, I have establed a cyclinder or winding, over which, and through a pulley liveries attached as the long at right angles to the windless, passes a rape of efficient strength, about two thousand feer in length, and being made that at one catenity, remain assumption in their wind estates at the time regarded. The theorem extensity of this way are fastered at certain intervals a number of read stort waterprof causes began the approxes of which are large one by means of small ringe of middless started, in read a names, when the superpost the vester, to addition only the contribute of the disposal a number of small coincide floats of hallow expert, which are intained to serve the purpose of respecting the largest As number of small coincide floats of hallow expert, which are intained to serve the purpose of respecting the largest As number of small coincide floats of hallow expert, which are intained to serve the purpose of respecting and difficult to provive. As the balloon descends, under the influence of any of the cause before mentioned, the tower period on this rap becomes probably deposited prouse because of the sate, lightnessing the halloon of its weight, stuff as efficiently also become the same, or a very slightly verying electronic, until the acquisite, by dauge of unsprinters, softlicks interest of power to enable her to recover her previous station in the above. At this point, however, mother from case into operation. The small creaves twoor dwickly, when the halloon began to with, were surply, have now because think, and being so much adoloout weight effectually prevent her, and edding her to continue her course, victor with her whole reginglo mery, at an attitude light removed them that which at the lowest down we continued. The area of the continued of the co

Beside these absumpess serving from the use of this instrument, which has not morphly here termed the "puls-open," and the followy of which in in simple frame, ence once the land, the rester may possibly received was tested in the exercision to Weilberg, there are others of great importance, which it may not be ministresting to move here. Allough described in a persisten with abrody commissioned to the public. One of those is the assemt of affects has necessarily of the extraction of the contraction of

Asocher qually valuable indication affected, and one which likewise in attituishe by no other assume, is the determination of the allocate att which the bollow is at the time from the immediate restrict of the earth between, when the vive is obstrated by reloads or impeded by the sholes of alght. The importance of this administion regarding only the desiration shows the level of a some fixed place; caused be some closely have that by referred regarding only the desiration shows the level of a some fixed place; caused be some closely have than by referred to the necessary of the contract of the contr

Bring nor explained, to the best of my ability, the mean by which I supert to be able to ministude the sensitive power of the billoch tendepoids at such longer profit than we have any remote to balliver it would be required, even in a vayage of such meetind duration, how to secure the proper direction of her coarse becomes the met slight of our consideration. And the I propose to first by thing alvantage of the natural current of the method of the state of

These two sources of information, namely, my own asperience and the observations of others, refer, however, to two distinct classes of cerrents; the former governing the motion of the atmosphere in its higher regions, and the latter the ordinary course or coarses of the strata more immediately contiguous to the surface of the cards.

Many speculations being been started, from the first discovery of accessitation, regarding the probable condition of that previous of the standards report that reach of our ceiliumy describation, but you fine at its object to not the influence upon the corne of my ballows of the cornects of air which it might there hopps to encounter. The result of my deventions was the discovery of an uniformity in their directions materials at to keev it almost impossible it could be the effect of accelerate, or otherwise than the natural and prevalent condition of the counterprise direction of the vision below, I uniformly found that it is a creation between two species, constructing that always within 10,000 fact of the carte, a covered from the surf, or rather from the eart of growing, nearest presult, or not I received as a significant ease of all two hardest and neveryfeet, the number of my acciding accountable electricies, in which a different result cassed. New, though I she pare not so sweet that each precision provided in the contraction of the transpaces algoes, yet all think I may indicated to considering that a condition not very dissimilar may characterise the more elevated regions of the atmosphere throughout its whole

With regard to the currents more contiguous to the surface of the curth, excepting that most meaperitedualty excepting by the trade winds, much measurathy, as coulds, claim. In other one sousses, however, when the winds are addited to blow from certain quasters, long experience has distinctly proved; and though own at the most regalar periods of the year, for any pariscless increase, compations amy occur to vary in this direction, yet it subtom so happens that such as mideraily prevails throughout the whole body of the atmosphere, but that come part may be fined to forward the particular corons in view.

To enable the aeronant to wall himself of such a conclusation is one, not the least of the advantages to be statistical by means of the gwide-rope. Having already aboven its operation, in confining the course of the halloon to a certain level, I shall here only observe that the determination of this level within the limits of the gwide-rape is contrivy at his option; the offset of the windless in curtailing or letting out the rape enabling him to depress or devate the helloon at his discretion.

Should the direction of the stroughers, however, be absorber undersorable to the proceeding of his intended routs, there is still one other capitate to which the gain-leve well caude his not have recover, and which, though it cannot evail to dom the adverse current, will jet canable him to scrattalism such of its injurious effects. This is the application of a strong survey, constructed on the principle of the ambient by resolved, antibods to the lower extensity of the guide-nops, and made or leverably process of a separate communication, whereby the great of the halloon may be considerably developed after comes of the separate communication, whereby the great of the halloon may be considerably developed after comes of the separate communication. The separate construction of the separate construction of the considerable conduction of the considerable conduction of the separate conduction of the sepa

From the foreging statement regarding the prevailing direction of the which the revole will now preview the mosen why! I should have fined upon America in performen to highland and the joint from where the attempt should be made to trevens the Atlantic in a hallow. Whether the mean I have here described be such as ore conjected to produce upon his shall as corrieotion of their effects; it is not for not be described. The three completes in any ordination, I caused give a stronger proof than by my realization to analoritable the accuration, should then be found amongst the wealthy produced as a set upon allicity deposals of our ten has one-grid than it have no long cultivated are concerned, I shall be ever ready and must lappy gardinously to contribute up services.

A double balloon ascent from Philadelphia, in July, and two from the town of Chambersburg, in the course of this year, deserve to be recorded in Mr. Wise's own words:—

Everything being ready and the hallown filled, at heliquest readve clonic 1, proposed to Mr. Paullin dast we should not and address from the search at the same time. Accordingly, the signal for the same was given, superable 1 are 1 lower and ascended 50° or 600 flot below Mr. Paullin's ballown fillerwork. It somes he was about 1 and 1

...

that boad. I rapided, Nover mind the danger, III be abler you presently. "His fullows now stood about 200 feet from mins on all this shows me. It said, "What do you thin of the sight!" I rapided, "I his magnifector too; do you see the Lilipetines on the Delaware!" Fullism and, "I feet a breeze coming." His believes to make the present a second of the sight of the side of the

This circumstance showed that a nipid current of atmosphere existed which was neither voice for eye, any machine was not far off in a horismat liberation, and encosed the part of Paulli's skillson at a right angle, lata few hundred first above it, without falling into the rapid current. This is a nestero-logical fact that is rest alleded to, if it is known by, the theorists of that entence. There is an inseparable concention between efective and atmospherical currents. All my experience in passing through those currents traversing each other, has developed that fact.

While I renatised almost stationary over the city for half an born after Paullin's hallown had been drifted of, preceived that he made zeveral efforts to had; but as often struck the surface of the river, until, by going as again to a considerable height, low ma drifted some distance over the river into Jersey, where he effected a dry landing some distance below Woodbury. Half an hour afterwards my descent was made near Red Bonk, not moch over half the distance from the place of departure that Paulish's was.

# The two ascents from Chambersburg, Pa., were in August.

int—Here the halices shifted from a northerly to an enterly direction, the atmosphere becoming extremely cold. At this time the news presented a subliss operatumes. Amond and bereath me the closels redied in angient grandest, receivably rising into posted summits, like voltances, and then disorbing down again into the mass below. The valley bensults, where it could be new, presented the nost gregous tacknessy exercy that I even below. The valley bensults where it could be new presented the nost gregous tacknessy exercy that I even below. The valley bensults where the summary is the summary of the country or existence shed with mornism that exclude the Atmerbeads valley presented intell me ay two. Locking over the North Mornals, the upow may greatly be a measurement of the summary of the country or extensive the contraction of the country of the country of the country of a summary of the country of the country of the country of the country of North Mornals, the upow may be compared to the country of the country of North Mornals that one of the country of the country of the country of North Mornals that one of the country of the country of the country of North Mornals and the country of the country of the country of the country of North Mornals and the country of the country of the country of North Mornals and the country of the country of the country of the North Mornals and the country of the country of the country of the country of North Mornals and the country of the country of the country of North Mornals and the country of the country of the country of the country of North Mornals and the country of the country of the country of the country of North Mornals and the country of the country of the country of the country of North Mornals and the country of the country of the country of the country of North Mornals and the country of the country of the country of the country of North Mornals and the country of the country o

#### Like olive bound with issures fast, Whose verdure great for ever last.

Looking over the Soath Mountain, the sense was estimyly different. Here an extensive bandeeque war presented, elementale by regged and massive clouds, interpresed with numerous rooks which looked like to many which lines testmostly spread over its vertices, and new which manufacted from the base of the measurem prouds, sattli for fifther extensivity was been appreciately into the colone above, which framed the betters of any view, giving to its amplie appearance. This mountain had a very different supers from the other which were in view. To dath fifting, interpresed with intemassed which is decide personal implicating growth and present and the colone of the colone

At ten minutes before four o'clock, I descended on the farm of Jukeo Kongy. This old gentleman was so orippide with rheumstim that he was obliged to walk on crutches, and on these he lookided towards the place of descent, where the balloon was fastened to an apple-tree by the grappling-iros. Candeg and anning under a brite. brezes that was allowing at the time; and the old gentleman seeing this, and also observing ne at the same time in the car, and thinking that his societance was necessary in the energency, becausing more excited every jump ha made with his excetches, until at length he became so impating them his slow progress, that he dashed his crutches aside, and run the bakance of the distance between him and the balloon, with as much nimbleuses as a hale vome man.

2ad.—When I returned to Chambersharg, which was the same evening of the day the ascension was mode, bering handed only about twa've miles off, the offictors had already determined to induce me to make a repetition of the experiment, being so highly pleased with the one I had just made for them. This came off a few weeks afterwards, the day appointed for it hirringing with it is nin, which give an entire now feature to the veyage.

At twesty minutes after three of clock, the ballons was freed from her morting, and described a sentirised her pursal course, naking a half-from round the town. The locough hal a very subsite appearance, caused by the dark shalow which covered the curth—objects, however, were more distinctly visible than in clear weather, and this is always, the case who locking down upon the earth from hallon; where he saw alines on the earth there is were of a spirering hase covering it, than where it is in shalow. The scene below had a actualchely support—all nature meeted by he is a start of mourning.

Before I passed the limits of the borough, a parachate containing an animal was dropped, which descended fast and steadily, and just as it reached the earth my serial ship entered a dense black body of clouds. Ten minutes were consumed in penotrating this dismal ocean of rainy vapour, occasionally meeting with great chasms, ravines, and defiles, of different shades of light and darkness. When I emerged from this ocean of clouds a new and wonderfully magnificent scene greeted my eyes. A faint sunshine shed its warmth and lustro over the surface of this vast cloud-sea. The balloon rose more rapidly after it got above it. Viewing it from an elevation above the surface I discovered it to present the same shape as the earth beneath; developing monotains and valley, corresponding to those on the earth's surface. The profile of the cloud surface was more depressed than that on the earth, and in the distance of the cloud valley a magnificent eight presented itself. Pyramids and castles, rocks and reefs, icebergs and ships, towers and domes; avarything belonging to the grand and magnificent could be seen in this distant harbour; the half obscured sun shedding his mellow light upon it gave it a rich and dazzling Instre. They were really "castles in the sir," formed of the clouds. Casting my eyes npwards, I was astonished in beholding another cloud stratum, far above the lower one; it was what is commonly termed a "mackerel sky," the sun faintly shining through it. The balloon seemed to be stationary; the clouds above end below appeared to be quiescent; the air castles in the distance stood to their places; silence reigned supreme; it was solenmly sublime : solitary and alone in a mansion of the skies, my very soul swelled with emotion : I had no communism to pour out sey feelings to. Great God, what a scene of grandeur! Such were my thoughts; a reverence for the works of Nature; an admiration indescribable. The solemn grandeur—the very stillness that surrounded me seemed to make a sound of praise,

This was a seens such that I never behalf one before or other exactly like it. Two perfect layers of claude, one can call solve the early; is defined, about an like higher; and, between the twas, deal antesophers, in the united of which the believes the twas, and the substitute of the control of the vision in the control of the vision of the control of the vision of the control of the vision of the control of the control of the vision of the control of the vision of the control of the vision of the control of t

I remained in this magnificent baverly massive for as hore, and during that time did not more two miles in a borizental difference, as it was perfectly eads and sensors. The day was of a multiple themselver, were made in a borizent difference, as it was perfectly eather than the billion entered the cloud region it was mixing allightly, otherwise it that loop speculier colorateristics. The later extrame of clouds lighted to have how many 2000 to 2000 fact in follows, set it took mercure mixing to improve a server distinct to have been also as the cloud occur. It is not of my voice promoted a very distinct to cloud.

I made a final descent about five miles from Chambershurg, at thirty-five minutes past four o'clock.

1841,-In June, Mr. Wise's log-book has the following experiment :-

At thiry-few minutes por two clock [Lest sight of Tascille, and in a few measure afterwards passed in the clear modules only, in which they so loops to regulate all costs the billion to search with interested registry. The Sespenhann was now hot to my view by the interestation of clouds, and the country beamth presented to var with these and not to expected review, the atmosphere was extravely cold for the highly over this attention could region. The clouds beamth has were sufficiently below in a farter laws constantly occurring glimpes of things below, and I are view below from them, to extremely directed in their region reflect. On this contain them below, and I are view below from the many contrast principals in their region reflect. On this contain them, was consistent on, remaining marves and region [principals of the region of the contrast of the contrast, and consistent of the contrast of the contrast of the contrast, and consistent of the contrast of the contrast, and contained only of publishes here and then, the very light above the lower layer.

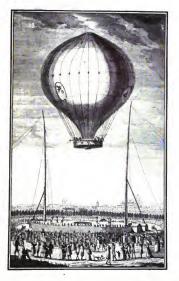
Af for yie or minute past two o'dook I crossed this Patterille read between the Bear Gap and Northundrehand read, twerling that there of about fifty on mile per lows. A three o'dook I crossed Patterill, and also longist to view the estimated fields of the hadrandams. My altitude was separat that I could not receptive the room until enough good beyoutful Haven, and coming in sight of the o'dopideng. The sold and receptive hours of the observable of the observable of the order of the observable of the observabl

At forty missive pair three circles the cloud leggs on thicken beneath no, or that at interval le could only one the four of the earth. Previousing a willing, which the bullow can sold our coming it, there from the case to be translated, which had been placed in it as the time of artificial manded to serve use as a surgery of the contract of the co

I from the atmosphere made colors in consisting this nontalinear region than its wastly is in constituy over a level and cilitation contray that some adoption. In the proper induces a present particular colors and a network and the color of colors is altered and with the answer in the state of the colors in a silication of the answer in this is equilibrium with the atmosphere. In this time, the colors is altered and the answer in the colors in the atmosphere in the atmosphere is the colors in a silication of the answer in the colors in the atmosphere is parameter. If the the notice is a clock which is entered by the problems. At fort I attributed this notice to so prescribed, the before, the victim of the large self-cent of the problems. At fort I attributed this notice to any location, the before, the victim of the large self-cent of the problems. At fort I attributed this notice to any location, the before, the victim of the large self-cent is the problems. At fort I attributed this notice that the colors is a single self-cent in the color of the colors of the c

At wenty-five minutes past four o'elock 1 descended near the house of Mr. Wm. Mellvain, near Morgantown, about seventy miles from where I started, in a straight line, where I was cordially received by this gentleman and his hospitable lady.

My leading law was caused by minking the Downington template-and for the Pennsylvania milway, which was some sight or to make further the south. During this vegor; all and intellige of the difference in temperature in crossing large valleys, where a degree of warmth now up quite coupsial to con't feelings while in a sharp region. This pressum, writes or have a greater quantity of the som't may being reflected sparsate from a variety than from level growed. I forget to metrics that the pulsarity notion of the hallows was not perceptible when it war integer or falling, and is only to detected when the moniton said as considerable length of time at a prod attitude in a study, believable distriction. Plectuations of the hallows by riving and falling from any cases on neutralist distriction most collection.



These assertance had at the Ordinance Survey Office Southampton under the imperationless of Cope Willeldown, have the bed Su'll house R.E. F. R.S. Director

This account of a perilous descent is given to show that even the great experience of Mr. Charles Green could not always render him proof against such casualties:—

On the occasion of a fite at Cremorne House, Chebea, for the benefit of the Polish Refugees, Mr. Green and a gentleman named Macdennell ascended with the Xaaan balloon, and the following description of the seriel trip by the latter gentlemans will be permed with interest:—

It was about five minutes after soven when Mr. Green (with his Liberator, as he calle it) finally let lose the last links that bound the balloon to the earth. We immediately ascended with a swift and steady motion till we estained the height of about 1500 feet, at which alevation we continued to move with considerable velocity till we found ourselves over the Islo of Dogs, when, throwing out some ballast, we rose many hundred feet higher, and were borne in a south-easterly direction towards the centre of the county of Kent. Here, at Mr. Green's desire, I throw down occasionally several pieces of paper in order to ascertain whether we were rising or remaining at e stationary beight. Soon afterwards Mr. Green drew my estantion to the smoke of the many steamers which were passing to and fro beneath us, and which was evidently blown in a north-east direction, towards the county of Essex. Accordingly he thought that by descending into the under-enrent which was blowing towards that county be might effect a descent where there were fewer woods and prehards to obstruct or andanger our progress. The result justified his expectations; for when, by letting out more gas, we had drawn nearer to the earth, we found that we were approaching the Essex side of the Thames. About two miles before us lay a large extest of champaign country, called the Salt Mershes, which oppeared to afford the requisite facilities for a safe descent. Mr. Green made his preparations accordingly by letting out the gas from the upper velve, and we descended swiftly to the earth. In a few seconds we passed over the Thames, and found ourselves about two hundred feet above the ground at the opposite bank. Here Mr. Green cautioned me particularly to take fast hold of a rope, which he had fastened across the wicker-car; and Inckily I obeyed his instructions to the letter, for presently we felt a slight check from one grappling-iron let down from the boop above to the distance of 140 feet towards the earth. A moment after there came a terrific shock; we were going at the rate of at least sixty miles on hoar, and our anchor caught in the side of a dike, and, owing to the extreme speed with which we were travelling, tore its way through the boop to which it was fastened, and, coming in contact with the car as it snapped, completely upset it, so that I and Mr. Green were turned topsytney, with our heads towards the ground. The rope which was passed across the car alone prevented our falling out; though so complete was the npset, that most of the contents of the car, such as the ballast, &c., as well as my own hat, dropped to the earth. In enother moment the car righted, and the balloon, thus freed from every check, descended, dashing us with terrifis force equinst the ground

Immediately afterwards it accended, and again brought us with a fearful collision to the earth. The wind was blowing with violence, and we were thus carried along for upwords of helf a mile, till at last we reached a sort of creek or small river, through which we were hurried half-buried in its waters, to the opposite bank, over which we bounded like a tennis-ball, and, after a few moments, found ourselves drugged through some acres of marsh and osiers towards a high mound, which I confess that I contemplated with fearful anticipations of the result. But onwards, still onwards, the terrible demon to which we had linked curselves held its way. Ere long we were dashed against it, and then carried over it right upon a strong paling that lay at the other side; but nothing could withstand our impetuosity, and we hurst through the oaken timbers as though they were rebwebs-not, however, I regret to state, without Mr. Green sustaining some very severe internal injuries. We had now a lovel plain before us, and the speed of the bulloon was beginning to be arrested by the great escape of gus; for we constantly, through all the vicissitudes of our fortnee, kept a tight hand on the rope which opened the apper valve. Here e comical sight presented itself, if anything can be reckoned comical to persons situated as ewfully as we were There were large herds of eattle grazing in the plain, who, when they perceived the balloon opproaching, at first formed themselves into a compact body, as though to resist an inveding enemy; but on our nearer approach field panic struck before us. Never was seen such an extraordinary chase; we dragged along the ground fastened to a monster that seemed to disdain all human guidance, and chasing a herd of cattle, who fied in terror, with their tails in the air, and their heads to the ground. Ere long I found means to throw myself out of the car without sustaining ony meterial is jury, and seized hold of one of the ropes, which I twined round my left hand, as I was appreheasive that the balloon, when lightened of my weight, might bear my fallow adventurer on a second reluctant wist to Nosan. The request throughout field near the contribution of the latest throughout field near the country managed to hold on till a country managed to hold on till a country managed to hold on the country managed to the country and not consequently also not consequently also not consequently also not consequently and the country managed to the country manag

### Mr. Green says of this voyage :-

Highgate, August 16.

A.D. 1841.

Having been in the atmosphere about fifteen minutes, our descent took place at twenty minutes past seven, P.M., is a large marsh in the parish of Rainham, in Essex, after crossing the Thames four times. The distance, as near as may be, from Cremorne House, is about twenty miles. On no former occasion of my numerous ascents have I ever had to contend with so violent a wind as raged-in fact, it was only a vary short time before we ascended that there was an abatement of its force. Netwithstanding that the spot selected was very well adapted to effect a descent, being extensive, open, march land, I never experienced so rough a landing. The first time the grapuel took a firm hold the shock was so violent, in consequence of the state of the weather, that the hoop te which it was attached, and which had been used by me and my son in ne loss than 313 veyages with success, broke, depriving us of the grappel and cable, both of which had been left behind firmly fixed in the chiect to which the grappel had caught-a bank. We were then drugged about a mile and a half over the earth's surface in the space of three minutes, by which time nearly the whole of the gas was expended, in consequence of our never abandoning the care of the valve-line. We received several sovere shocks and concussions in passing over dikes, banks, and fences, and a strong paling, through which the car tore its way by the velocity of its motion. This illustrates in a new form that fact in natural philosophy, that a comparatively soft body like our flexible wicker-car, when is very rapid motion, will force its way through a hard one without itself suffering material injury. I am happy to say we eventually escaped, but not without some severe bruises: we did, indeed, get some hard knocks. Had it not been for the determined courage of my companion, to whom I had the honour of being introduced by Lord Dudley Stuart, who himself made a voyage with me on a former occasion, the descent must have been attended with most serious consequences. I understand that one of the reports in circulation is, that the injuries I have received are of such a nature that I must abandon the profession of an aeronant. Parmit me to say that I hope to disprove this report by making an aerial veyage from the Naw World to the Old, taking advantage of the prevalence of the westerly winds, as soon as I shall have constructed the kind of balloon which I know to be accessary for that purpose.

CRAMILES GROSS.

 $\Lambda$  lady wrote this letter to the editor of the "Weekly Chronicle," in September,  $1841:\!\!-\!\!-\!\!-$ 

Dean Sue. September, 1841.

Agreedly to your devire, and not without considerable relactance, I ait down to endoscore to give as account our old-sightly trough, but deeply prescript gate any power of par will problem the afterly period (A an problem) and a problem of the pr

we enhanked, impressed with fulfier tiews and every prospect of a pleasing voyage, taking a north-constayl direction, which current, with but little variation, here us throughout. It is interly impossible for parenca on thair first alreation to give expression to their feelings. There is something swifel in the very novelty of the aintaint that, to a great degree, paralyses the language of description, and yet the new may be consulted manignary; for the talkion that Heispanian Franklis recognised as by appears belaw resheds the mashood.

On leaving the gardene we were somewhat flattered by the cheers of those we left behind us, and they changed notes in proportion as we towered over the lanes and thoroughfares adjoining. The motion of the machine was so imperceptible that it seemed not to us as if we were leaving the gardens, but as if the gardens left as. The first blush of observation presented to us a something like a schoolboy map-everything fist, diminished in dimensions, and curiously compact. The motion of heads, and the turning up of faces, partly indicating animation, but more especially reminding us of bas-relief sculpture. We soon triumphantly o'ertopped the orientalists of the metropolis, and then the scene changed shades, and assumed a different shape. The river Thames became like an animated reptile, of ponderous growth, serpentining along, and seeming to encircle in its coils the mighty London, the mistress of the world. Crossing the river between the Tower and Blackwall, and surveying the scene we were passing from, the lights sprung up in rapid succession like glowworms in the twilight. The objects became more compact, and the bridges bere the semblance of beautiful and aparkling fillets, encircling here and there an immense less-constrictor, and fettered, as it were, or controlled, by white and riband-looking roads, the inlets and entlets of the great city. Shortly after this we attained our highest altitude-six thousand two handred feet, or nearly one mile and a quarter. We had expected, from what we had often heard, that some difficulty of respiration would have been experienced; but, so far from this, we fancied that it was more free than usual, added to a buoyany of feeling perfectly delicious; and, instead of the cold usually resulting from a great alevation and a rarefied atmosphere, the heat was unusually oppressive. We next passed over the forest of Epping. We now commonced rapidly to descend, till within two thousand three hundred feet of the earth, as indicated by the barometer. For the first time we became censible of the motion of the balloon, our gradual approach to objects, anabled us, by comparison, to form a judgment of the swiftness of our course

The most salkine chiper that accompanies to throughout our trip, when night had set in, was the axon and in effects on the scene benealth. For needings of the most produced was present the process of the scene production of the chica, nor congestivity disappearing—leaving this in actuase, and saladealy penearing the same appearance extending produced, that the scene result of the contract of the most promisent objects attracting our attention, from its unique scene of the accordance of the contract of the

M. Green now become suction to descend—but finding, from information defined by the good falls below, that the ground was not well adopted for its perspow, we now ensurement, but still its intense direction, sufficient was also at fairer pot, as will us the obscuring shalled M. Green to plage, being without the guide-line. Our new Copy, and the state of the property of the contraction of the contract of the contract of the contract of the foreorite shalled of "The jolly young watersmap," with many other little findam of ammentat, which he called a placeling. We also because a state of the contract and authorized, it is includente. Not so the diseaset. Mighted the company with the called all these pleasing parties—sole, lawring united at a place that he thought would be mixed, he acconstruct a statement of the merflow, abid could not be a pleasing parties—sole, about one of the contract of the merflow, abid could not be related, until after two or them astropay, beard, with the assistance of the merflow, abid could not be related, until after two or instances. We were any type of fair the lawring contained by injuryed from the contract prophs, the iron was properly planted, and we could especial thanks to ready little archiving, who bounded over height and dicts be our assistance. We were any type of fair the labour contained by injuryed from the contract property and them per and the contract property and the size is, which is a size of the contract property and the size is, which is a size of the contract property and the size is, which is a size of the contract property and the size is, which is a size of the contract property the assistant as a nightly proving size the contract property distribution in the result of the contract property the assistant as a nightly proving size the contract property and the size is, which person in the contract property the assistant as a nightly proving size the contract property and the size is a nightly proving size the contract property and the size is a nightly proving s

stacly as lower and ten minutes. We were now on term given at Knawstock, near Brustwock, in Baux, twarp, there make from Verstalli. We were insight privated to the norm of Mr. 4. Cronchause, by his good larly, we was attracted to the groundy and to ber kindness, and the efficient services of the habstod, we were used habsted. Fleding we were in a part of the courty schemning is room ready and the cuttle being segged in the harves, it was three boarn before a conveyance for the balloon could be obtained. A very suplemant incident occurred after inciding, none can be having inference the constanted drawper of the excit past framed the registers of the organization of the profess of the profess a fine young fallow was presented to un manufed as the third. Mr. Green had previously bandeously reveated him, to show with his follows. It was our own quinted that the pore filled and at which as most.

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their first value, as to obtain a relic.

Their comes the price of phosons. Their were Mrs. Green and mycelf, Dr. Locock, Captain Cury,
Mr. Dally, a guadlessa whose manse we did not learn, and Mr. Green, driven to our with and. We called a
commond of appellesse, We found constructs in miles from any produces. The gentlesse were capable or
walking as miles; this was, however, rather too great a distance for two ladies, and, by direction, we segrit
shallest at a hoose a mile and a half distant, where, we regret to any—through a finantic enactive we propose the
hallshapt—adminsion was refuned the party, heightful as we were; aboving not only a want of common
contract, but a complete his of half miles in the process. The first first produce the party, heightful as we were; aboving not only a want of common
contract, but a complete his of half miles in the process.



EAGLE AND RAYER.

He chaps the erg; with hooked hands, Close to the sun in lonely lands; Ring'd with the aure world he stands, The wrinkled sea beneath him crawls. He watches from his mountain walls, And like a thonderbolt be fulls,—TENNON, able appeal, we retraced our steps to the hospitable cottage of Mr. Alexander Doddington, a few minutes' walk, whose whole family vied with each other in ministering to our wishes. One of his sons was immediately despatched on horseback to furnish us with such atores as he was himself deficient in. Our eventful currer was finished in comfort before a blazing fire, lighted for our especial benefit, and every other accommodation was at our service. It is pleasing to contrast the warm-hearted kindness of this worthy family with the unfeeling brutality of the other. A postchaise was obtained shortly afterwards, and we reached town in the morning, between nine and ten o'clock, delighted with our excursion, nothing the werse for an adventure or two, and looking forward with much pleasure to our next trip to the Isle of "Sty." I have, &c.

JOANNA FOREIST.

The newspapers in November, gave the following account of the widow of Montgolfier: -"This lady, who has now reached the very advanced age of 107 years, lately visited the town of Triel, in the Department of Seine et Oise, for the sake of seeing the fine bridge erected by her two grandsons, the MM. Seguin. She was accompanied by some of the first people of the town. She made the tour on foot, and seemingly with the greatest case possible."

1842,-This year Mr, Wise made an ascent from Lewistown, Pa., in April; and another from Gettysburg, in September. He says:-

After rising to a considerable altitude symptoms of excited electricity were powerfully exhibited by the attractive force of the upper part of the balloon as it passed slowly through the eddy between the upper and lower currents of air. Itising above this point by a circuitous ascent, the country for many miles round became visible. The borough of Lewistown represented a figure like the letter Y. While still ascending, mountain after valley, and valley after mountain sprung up out of the body of the earth as by magic. The subline workmanship of Him that made the heavens and the earth Jurst upon the vision with anazing grandeur, and smiling nature, clad in her vernal garb, looked up toward heaven with a plensing countenance. For an hour or more new and beautiful scenes were continually developing themselves. The mountains appeared to range in astonishingly exact parallel semicircles, alternated by the gayer-coloured valloys between them.

The Juniats River, meandering through the mountains, added much to the beauty of the scene; and my attention was particularly drawn to that portion of the river which passes through the narrows just below Lewistown. The probability of the impression which has obtained with many persons, that the river has, by a sapping, percolating process, worked its way through the mountain, in entirely destroyed when the place is viewed from the point where I passed it. From there it has the appearance of an original formation coval with the earth's adaptation to watercourses; and, were it otherwise, it might have worked its way through some distance above by a shorter and apparently easier route, or continued seven or eight miles further in the upper valley to where it blends with the one on the other side, into which the river runs

A calm and daliberate contemplation of the workmanship of the earth, when viewed from a high, isolated position, bringing it in view as a whole, leads the mind to very different suppositions and conclusions to what it would arrive at when viewing it from its own surface. It may be properly illustrated by the comparison of looking at a rivulet, or the great river that rises from a number of them; or in viewing a single house, or the whole city. The earth, viewed from a great height, assumes a regularity of order, skill, and arrangement, which

cannot fail to strike the mind of an observer with force and admiration.

In May following I made an ascension from Bellefonte, Pa. The last paragraph of the log-book of that voyage says: I have at present in use a black balloon, which greates a congenial atmosphere around itself in the cold upper regions of the air from the radiating superiority of that colour over a lighter one. It is now beyond a doubt in my mind established, that a current from next to east in the atmosphere is countently in motion within the height of 12,000 feet above the ocean. Nearly all my trips are strong proofs of this.

While I was remaining at Wilkesbarre, a very flattering invitation from Messrs. Glossbrenner and Morris, of York, Pa., who were then on a visit to the Wyoming Valley, was tendered me to come to their borough and make an ascension, which I cheerfully accepted. The late Mr. Mills, a very successful aeronant, had made a vary satisfactory accuraion from York the summer previous, and died there while making preparations for a second.

- As fate would have it, the day turned out with beisterous and stormy weather. The atmosphere was continually charged with block thunder-clouds, and incressant squalle of wind alternated the strong gala from the west which blow all day. The people, no way dasuated from the last summer's failures, poured into town in a continuous stream. Twelve e'clock came, the time for commencing the inflation, but it brought no hopes of success in case it should be attempted. The people began to gather round the enclosed arena, which occupied a large open common on the entskirt of the town, and frequent and determined were the threats from their lips of what would be done in case they should be "humbugged again." As the time passed on, my friends also became uneasy, they thinking I was rather timid. Thus things went on until near two o'clock, the time announced for starting on the voyage, and things were coming to a crisis; already from eight to ten thousand persons had assembled on the common, and more than threat had already commenced to develop itself in some angry countenances. The last consolatory words from my particular friends were, "You are in danger of violence." I had remenstrated against their advice of going on, as I centended that a failure would be more fatal to all concerned than a postponement to a better day. But they told me a postponement was out of the question under the circumstances. Now, as I had no confidence in the strength of my balloon holding out under such squalls. and as a postponement would not be tolerated, I determined to reason with the people, and et once wout to the ontside of the arena, mounted a table, beckened the immense crowd to listen to me for a minute, which, after one very refractory individual had been quieted, was granted.

I made brief statement of four and deromatoness, as consected with the seconies, and mentioned to them that God quade the wather, while I profused only to make seconics, and these parts deposite to them whether I Lobuill go on ander the elementations or positions in to a better sky, with the previae, however, that they would be grinten suches the rich of a following, and that they were not to make any not simple me be madeled, and the grinten when the rich of a following and the state of the simple st

In another moment the gas retorts were in active operation, as no time was to be lost in getting the balloon inflated. This process had not gone on long before overy one present began to realise the truth of my remarks.

- The hallons stood the blast, and at four c'elect was sufficiently inflated to prepare her for the fight. As the inflation and starts are smallly and graphically described by the "Arth Gustatic," in activite relative to this consists may be properly quoted:—"Nr. John Wise, the celebrated American serousat, made from us enclosure at this place on Starting but, one of the most benefit hallon ascensions over witnessed in Premaybrank, or probably in the Enion. An immense crond was assembled to witness the ascension; the number is variously estimated at from air to ten Goosmad persons.
- "There was quite a strong breeze early in the morning, and it continued to blow up to, and beyond the loan at which the inflation was to have commenced. This consistend some delay, as it is exceedingly difficult to inflate a hallon in a strong wind, and in four cases cost of fire when it is attempted he balloon is turn during the process. At about two o'clock, though the wind had not earlierly cossed, Mr. Wise, exciten to graifly the thousands who assembled, many of them from a considerable distance, we written as mercation, determined, at the risk of

destroying his new and coulty balloon, to commence the inflation. Then the danger bosume ordent to all; for although the wind was very slight, yet as soon as the balloon had been swelled by the gas to a beight fart, eight fact, so as to present any surface to the wind, it bosums as fractions as a dranken Mohavek. Mr. Whe found it ascessary to have the assistance of about a dozen of his friends, who were all kept quite busy in preventing it from starting itself by pieces.

"The accellent preparatory arrangements, however, of Mr. Win, and his unrulled temper and systematics are to fine method of conducting the process, overcome all the difficulties; and at a bount four o'clock he attacked his care to its aerial steed, antered it as ocelly as though about to seath himself for a ride upon an 'ambling pad pony,' and was launched, and the cheers and shouts of concremental thousands, into the sir.

"He cleaved the enclosure by about ten feet, and saak a few feet immediately on the omisin, in thy throwing out a postrion of his hallast he was enabled to rise sufficiently as he moved of bunnfiled) in on casterly direction. He seemed, to those who saw hise from the point at which he started, to rise as he receded, keeping on in one direction small list to their view behind a cloud about five sulkes datant.

"We never now a more gratified multitude than were assembled on this occusion. All occord delighted, and to be at a loss for words to argues their administion of the sight presented by the during accurant as he regard from his secuningly perfuse height by a great wave of his hat to the cheers that continued to greet him as long as his features could be distinguished."

### Nerrative of the Journal:-

At fifteen minutes past four o'clock the aerial ship, United States, was released from hip moorings under a heavy blow from the south-west, gliding swiftly near the surface of the earth antil her ascending power was increased by a discharge of about forty pounds of ballast; when at a distance of several miles from the common the ascent became very rapid. At eight minutes after the start I passed through some filmy clouds, going nearly parallul with the railroad all the time, and in a faw minutes overtook the locomotive, which had started about fifteen minutes before the belloon did. At 4.30 I commenced penutrating a dense stratum of clouds, after having unjoyed a magnificent view of the country for thirty miles round, bringing into view over fifty towns and villages, innumerable streams of water, with the beautiful Susquehanna in their midst. On entering the clouds the atmosphere graw cold; but after passing through the lower stratum, and getting into the shadow of cloud-patches far above the lower layer, the cold became so intense as to nonvert my breath freely into hear-freet. I did not suffer much from this cold atmosphere, as the excitement of the day had supplied me with a fervour that lasted through the whole voyage; and it would be a senseless being indeed that could pass through such scenes without excitement. While passing through the clouds, the balloon rising at a furious rate, I ettempted to open the valve to discharge gas, hot was prevented by the lower part of the balloon having so closely taken the valve-roun into a fold, it being flaceid, that it because impossible to work the rope through. This would of course become relieved by the axpansion of the gas, which would anfold it as it would rise into a rarer region of the etmosphere; but as the balloon was mounting so rapidly, and the air quito cold enough aircady, I was determined to arrest its upward progress by a violent tug of the valve-rope, which associeded in releasing it, and bringing with it a strip of the balloon five feet long and seven inches wide at one end, taporing to a point at the other. This piece came clear out of the balloon and dropped down by the car, so near that I reached for it as it fell past. Being from the lower side of the balloon, it would cause no serious consequences, unless in case of a rapid descent it might by the rush of air against it cause it to alit upwards, and open the whole side of the belloon, an accident which would not endanger my life. After having risen some distance above the clouds into a clear sunshing the temperature became more congenial, and a most brilliant cloud-scene lay beneath me; a spacious, snow-white concavity, with here and there e pyramidical projection jutting from the common surface. To the south-east e violent challition in the cloud-occan indicated the formation of a thundarstorm, which soon developed itself in uprising cloudcolumns discharging electric flashes and rutting thunder. The shadow of the balloon was visible on the surface of the clouds below, and, after getting so high that it became completely distended, I discharged gas from the velve, while it was at the same time copiously discharging from the hole which had been made in tearing out the pince with the valve-repe. The gas escaping from the rent below assumed a white, milky colour. Locking down upon the clouds at this time a most beautiful phenomenon presented itself, like that on the disc of a camera-obscura. Around the dark shadow of the balloon there eppeared a bright blue ring; and on the outside of this ring, surrounding it, there blazed out a brilliant halo of fiery red. This aplended image increased and diminished in size as the balloon was lowered or clevated above the cloud-stratum. I gazed on it until my eyes because dambd and painfully affected by its brillinery, and I could not refrain from obculating over the transcendent privilege of viewing such celential granders; for at this time a combination of scenes and circumstances, never before vitnessed.

at one time, compired to make the score grand beyond the power of description. When my serial solly had possed over the thurshestom, and get some distance shauf of it, I grabully descreaded, enothing the classification in five or six minister, and when in this cell, miny saw by feelings become an experiment of the classification of the bound the followed. I ready for this was expected inturder, who all best of three fives unsurpairs. As soon as I get through this gloony holes of the closels, and in view of as beautiful a proper to the year zego and, as the first limitative, when of limitation of the classification of the classific

After saling over the city of Lancoster my comes was parallel with the Pennytrania nalload, down which a becometive was plying with a train of curs, which was soon overtaken and passed, showing that steam cannot compete with halloon speed, when they both move in the same direction. At thirteen minutes past for elded: I landed on the form of Wan, litester, Eqs., near the village of Noveloland, about thirty-nine miles from the starting point, leight at the rate of fifty palse per bour in the horizontal direction.

When I returned to York the citizens had already contributed an amount considerably over and above the sum demanded by me as an inducement to make a balloon ascension, for another balloon voyage from their place.

This accession took place on the 20th of August following, on which occasion the sky turned out to ke of fine cheer wealthen, on a very calm stanophers. The Y-teX Gazeri, in noticing this recycle, inhiligate in the following neutrals:—We considered his thirty sixth accession the september in grandown, that it was for exceeded by the last. Mr. Weise, on this occasion, one forwards by almost a perfect chair, and howing each less code, he accessed almost perpendicularly to a beight of four or five thousand fact. He recoled from the spectation to accept the contract of the state of the second distinguish his features for local time suitance, and he from the over its instruction, the observable of the contract of the contract of the second contract of the contract of the second contract of the contract of th

"It is not to predict, that not one of all the vast crowd assembled on Saturday will ever again witness on case a specacle to resusterably grand and sublime as that presented by Mr. Wise in leaving the earth on his thirty-several serial voyage."

in lies of the account from my locy-look, the above has been quoted. The voyage being ever nearly the same course as the one preceding it, and nothing of a new character having occurred in its progress, it would consist of a mere repetition of what has been said.

In September of 1842 I make as seconds from Gettysberg. Pomplymais, of which the following account was written at the time. During the preparatory arrangement for up thirty-righty natively oxyges, made from Getysburg as the 16th inst, it was neggested by Printener Jacobs, of Printy-Printin College, in company with the contract of the printener of the 18th printener of the

on my wayme, teabre minutes before four clocks, was perfectly calm, and the upper heaves was completely partitioned off from the worth by a thin layer of clouds. The height from the centre to the clouds was 2000 first by measurement. The atmosphere became nlightly colors as I ascended bigher until entering the clouds, where it was somewhat warmer than just beneath them; and when entirely above them the smale mys had a powerful effect poon on trober and some the ballow, as its necessionary most consequent most to equitable the smale mys had a powerful effect poon on trober and sport the ballow, as its necessionary most consequent most conjustive that the same myst.

The phononeurs of referred light, which had so much interested me on a former vegace, made in sponsane again pass the his layer of clouds becaused, and my particular stansisies was not directed to its operation. The particles was this time more parfectly formed in regular primatic rings, the cloud-stratum being this to which it was referred, and conveneurally did not referre to make italizing light as before, when it was diriched. The appeared toon this exception that the cross national to its production on a ferror veryage was not altogether assemble hitten produce energed of pass were in his originated tents here mel'distion of pas round the balloon. This six being very earls, suffered the balloon to remain a looper time in the same spot, and consequently a more and now referred requires would be formed around its entities of the relating power of its olour (clicits).

This hadow of the hallow was well defined on the elooks, and the primarize colours ferming rings around it were heilitant; there appeared also nother, but dist abudow, immediately opposite the man one, much narrower and fainter; and they cole reason or rather hald on the primarite rings, reaching from near the centre to nonelistance over the nearer rine.

The smaller shadow was continually expanding and contracting, sometimes getting nearly as white as the main one, and then contracting into a mere line again, resembling in its action the service motion of the aurora borealis. This motion I thought might have been caused by the different degrees of thickness of the cloud-stratum on which it was formed; as also the difference of distance between the balloon and the surface on which it acted, as the clonds were moving along, while the air-ship was apparently becalmed; this would continually change the condition of space between the object and its shadow, as it would the density of the substance that formed its screen. The parholion and shadows varied in size as the halloon ascended or descended, which I caused it to do several times to a degree of not less than six to cicht bundred feet. What accessed most remarkable te me was the appearance of this phenomenou after the balloun had descended between the clouds and the earth. While coming down over an open space in the clouds I neticed the purhelion disappear in it, and in another moment discovered it en the green surface below, being a wood, not with its regular rings, but in a red flory hale, blending all the colours in it; and when it passed from the wood it was still perceptible on the green fields, but more diffuse than when on the wood. When I got below the cloud-stratum the balloon moved slowly in a horizontal direction, at the rate of about a mile in eight minutes; and whonever it would now an opening in the clouds, so that it fell in the sun's rays, the fiery halo made its appearance at the corresponding point on the surface of the earth. The appearance of the phonomenon on the earth's surface was much like the reflected glare in the sky of a night during a confingration

During the early part of the veyges there appeared a magnificent sight in the vext. No clouds being in that direction, at a part zero must lead on particular of the memonic region was receiving a food of light from the easy which gave it is preclike basis, such as I had sever even below, though it has other happeared that the own a near mility-locking speech that is usually the own; and it was noticed by the spectrum below, who informs one of its distribution of the contract of the contract of the contract of the relationship of the contract of the decision, until its relation that is able to be allowed to be able to be able to be a second of the submission in the clouds, and it it such after both many the contract of the co

After remaining in the atmosphere eight minutes less than one hour, the greatest part of the time above the clouds, I came down to terra fema, two-and-a-half miles from the point where I had started.

These interesting facts were observed and noted with as much precision and deliberation as if they had been observed from no private chamber; and they were submitted to my friend. Prefeore-Actool, who had been with me during the inflation, engaged in observing the experiments made before the start; and it was he that took the stitude of the clouds.

The people of Gettysburg were so much pleased and interested with this ascension that they determined to

have the experiment repeated in a few weeks afterwards. In the mean time, by their particular request I entertained them with a public lecture on the subject of seronanties, in the contributes. Touching strongly upon the simplicity of the science during this lecture, and portraying the magnificent grandour of its developments to the practitioner of aeronautics, it inspired some of the hearers with an indescribable desire of its enjoyment; but only one of them was willing to believe implicitly what I had said of its non-danger, as practised by me. This individual was Celonel John M-Clellan, of Gettysburg. On the following day he made me a proposition to take him along with me on the contemplated voyage to be made in a few days from that place. The time being too short to make the extra arrangements necessary to carry another individual besides myself, I mentioned it to the Colonel. and at the same time informed him that if he did not wish to wait for enother opportunity he might take my place on the Saturday following for half the price of what I had asked to take him with me, which would make it hat fifty dollars instead of a hundred. He answored that he thought he would take me up at that. I did not believe, however, that he would go by himself, inasmuch as we had already spoken of making it suit to take him up at Enametsburgh. When the day came for the ascension the Colenel made his oppearance about half an hour before the time announced for starting; gave me the fifty dollars, security for the safe return of the balloon, and took some hasty instructions for the management of the machine while aloft, and also to effect a systematic descent. These were as promptly given him; and after this no persussion, noither from his brothers and sisters ner from me, would induce him to relinquish his desire for the present; and so I sent him up, confident that he wentd come down safe if he did not give up the ship; and my last injunction to him was, "Stick to the ship." He went up in gallant style, throwing out ballast until he mounted to an eltitude of about two miles, and then passed out of eight. He went about twenty-five miles, landing a few miles west of York, Pa., and was from thouse escorted into York by some dozen acquaintances, who saw the balloon descending, and finding with it, to their great autonishment, Colonel John McTellan, of Gettysburg, instead of the individual with whom they had an understanding to meet, if he world come down near York. Indeed, I recretted that I had to force the pleasure of paying my York friends a visit vis the clouds, when I saw the favourableness of the breeze and the pertinacity of the Colonel's intentions.

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When arrived at York, and arrounded by a host of friends, the Calcost was requested to give a detailed verified acception of its deverture, which be did, and with a great deal of accessary, desiring, that below hose moneted coming down ho had been a deliberate observer. Mr. Glessbrauner, older of the 'Vork Garstie,' being present, test botte and made a publication of it in his near paper, it is written with such moment, but severitles how with a graphicnes and accessary in regard to the superance of things that could only come through the negretions of an artent observer. This description has already because an inhetrical fieta, and is a follows:—

# " Bai looning Extraerdinast.

"A dering fiest was accomplished on Statushiy has by a citizen of our neighbouring tows of Gettysburg. Mr. John Wing, Mr. American serments, pre-ordinary, but assemed his instettien to make his thirty-midth allows assembles on that shay, from an evoluture in Gattysburg, and, with his meal practicality, was ready on the shay and hower president. His fallows was inducted in blanking appropriately, e.g., they derived, and he was about to superive particularly, which the share is a state of the sta

"Mr. Wise then let up the balloon a short distance by a rope, thinking probably that as there was considerable wind, and the six-horse consequently turbulent, that his satisfair would have his seenage code-let, and "give ing" but this was no go; and thinking that he had ago of a start as ever he would have, Mr. McCellan cut the rope, and sen off! After he found that it was the determination of Mr. McCellan to go, Mr. Wise had but time to give him a few hasty and imperfect instructions in regard to the management of the balloon, and in a few minutes the daring amatour account had ascended to a height of about two miles. Here he struck a current of air which bore directly towards York. He says that the earth receded from him very rapidly after he had thrown a bag or two of sand upon it; that Gattysburg passed off towards Hagerstown, and that he saw Carlisle, Hancrer, Abbottstown, Oxford, and Berlin strolling about; and that soon after, just ahead of him, he saw old York coming fall tilt up the turnpike towards him, apparently taking an afternoon walk to Gattysburg. Having determined to stop at York, and fearing, from the remarkable smeet at which our usually staid and soher town was travelline, that she would soon pass under his follow, and give him the slip, he called the string attached to the safety-valve, in order to let off a portion of gas. This valve is so constructed that when a rope attached to it is pulled the valve epens to the interior, and again closes by the force of a spring when the rupe is let go. Unfortunately, bewever, the inexperienced aeronant pulled too violently at the valve-rope, tore the valve-door completely off its hinges, and brought it down into the ear. When this occurred he was more than a mile high, and he immediately, and with fearful rapidity descended, or rather fell, to the earth. When the valve-door came off, the gas, of course, escaped rapidly, but the balloon caught sufficient air to form a parachute, by which the fall was moderated; and we are happy to say that the voyager reached the earth about five miles from York entirely uninjured. He says that as soon as the valve-door came down upon him he knew that something had 'broke loose;' and just then remembering that Mr. Wise had told him to be on his guard when he descended, and throw out his grappling-iron, he was preparing to get at it among the numerous things in the basket, "when the earth loosed up against the bottom of the car!'

"When first seen from York, the balloon was about thirteen miles off, nearly due west. It appeared to be approaching directly toward our town, until the turbs was pulled and it had fallen considerably. As it field it seemed to find a current that how it rapidly toward the north. The spot at which it handed in about north-west of our boursels.

"The escape of the gas was distinctly seen from York; and as the balloon neared the earth it had lost its rotundity, and appeared to the gazzrs here to come down Accraig, like a wet sheet."

This was another proof of the efficacy of atmospheric resistance in bringing large surfaces falling through it down with a moderate velocity.

183.—This year is noted for the greatest attempt hitherto made to construct an Acrial Ship, of which Mr. Henson, a civil engineer, was the designer. It becames no propulor that, on the motion of Mr. Roebuck, the "Aerial Transit Bill" was reed a first time in March. A trial, however, soon showed its defects. I leave its description to the Chapter "On the Method of Guiding Aerostats."

Mr. Phillips, also an engineer, published a circular, called "Acrodiphros," in which a company was proposed for carrying "aerial navigation" into practical effect. At the Royal Adelaide Gallery also was shown an ellipsoidal balloon, to be propelled by the Archimedean series, designed by Monk Mason.

Mr. Wise's ascents in America are related by him as follows:-

The accession from Carlisle was anneanced to come off the third Saturday in May, 1843. It turned out to be a reprinteresting one, as I had promised my friends in Inascenter city to visit them viit the atmospheric current that along bloom from wort to sent in the higher regions of the sir.

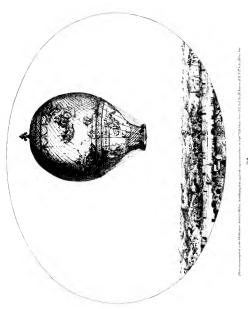
Rev. Mr. Thorn, of Cartisle, a gentleman of the highest integrity, and well-trained scientific mind took a lively interest in the experiment, and is the author of the following eloquent description of the first balloon secunion made from that place:—

"The balloon ascension advertised by Mr. Wise, the celebrated acrount of forty aerostations, took place in the respig on Sutradry last. The day was preceded by clouds and gusts of wind followed by rain, accompanied with the nost vivid finabes of lightning and bearing peaks of thunder with which we have been visited for a length of a time; and indeed, so marked, according to beams seductation, was the appearance of a continuous or

anch weather, so subversive to successful exhibitions of this kind, that many persons imagined the feat would be abandoned or deferred. At about nine o'clock in the forescon, however, the clouds began to disperse, and the sun, that bright orb of day, displayed his Creator's power, by dispelling the mists and density of the atmosphere in which we had been enveloped, and substituted in its stead the most clear and effulgent sky we ever beheld. At ten o'clock, hundreds of persons from various parts of the adjoining country, began to rush into our town, sed to collect in various groups in our principal streets, which, together with the appearance and drill of Captain Washington's superior company of U.S. mounted Artillery with their cannon and accountrements, gave an enlivening and imposing scens to our borough. Soon after twelve e'clock the process of inflation of the balloon was commenced; at two o'clock, preparatory arrangements were made by Mr. Wise for his ascent, which, in half m hone, were ready. Previous to it, however, he with great politeness came forward, and in a very respectful manner, gave an invitation to the kelies composing the assemblage within the enclosure to approach within the limits prescribed for them, that they might have a mere clear and distinct view of the interesting scene they had convened to witness - which they accepted. He then proceeded to an interchange of saintations with the friends and acquaintances he observed around him - bule Mrs. Wise and his son, a promising lad of six years of age, an affectionate farewell; but with the entire confidence that the separation would be temporary-an absence of a few hours only. After which, making a general obcisance to all around, he stepped into what appeared to us a little brittle and insecure basket, with a fearless, unfaltering, and dignified mice. He then examined with composure the various articles which had been deposited therein, apparently with a view to adjust their balance, and to ascertain whether anything which might be required on his voyage had by any omission been left behind. Perceiving, to uso a familiar phrase, 'that all was right,' and that the most intense interest was depicted on the commenance of avery beholder, he gradually, but beautifully and majestically, ascended, amid the cheers, plaudite, and acclamations of the surrounding multitude, and the transporting strains of a fine band of music, discouraing an inspiring tune. Thus did the successful serial navigator depart from the sennes of terms from to include from his cloud-skirt height in fancy's visions on the baseless fabrics 'of the world's ideal,' and of the skieunknown.

"The Ballon arose, diverging but liftle from the direct line with which it set ent; and the accessant continued several handred youth above the spectation for a considerable that, working his has in recognition of the clears which were complicating him from below. The atmosphere selm and the sky series, he remained in sight amount passes wheeling him with the shortest part has been great wheeling him with the shortest part of the state of the

\* Such being the formulated circumstances make which this experiment was made and carded, permit are too-beever, that the remark is conceivabilly made in experiment to the existence of accusation, that invariates and his little are not to be renouraged or witnessed, because, through the pervension of men, they executionally lead to relate adapt excision ammentation. Amonthing that the third and permitsion ammentation. Amonthing that to the descent has a reason which it doubt the decircular contraction of the contraction. All relations are descented or long to be brought to such a state of perfection, and he made expelse of mining and corryings to much weight, we to be applied to highly model and important purposes. Let encongregates of given to these experiences; let "the such all the first invariance over a virth." In ellipse of the perfection, and he perfection, and the invidence of the contraction of the c



"They may tend also to the general ingrevement and numberation of matchind, in effecting the designs of a benefitive H profites are to set and refricate WHA. It is not possible, may in it may reducible, that we be just in subhide indecessions be held out to the promoters of this evision, a contrivance or means of conducting respective methods the entropic of the subhide indecessions be held on the through the entropic or in a benimical finition will be discovered, by making these muchosis respects to the heavy for the contribution of the subhide indecessions and the subhide in the subhide indecession of the subhide indecession of the subhide indecession of the subhide indecession of the subhide index of the subhid

"To these high and beneficial purposes we may add the gradification of excissing and pleasars, as a very strong indecessent to an enconsegment to the practice of the art; is which with any damphind degree of excision and information, there appears very little of real shaper. We have heard from Mr. Wie, and all whe have tried the experiment testify to the same, that the bowary and granders of the proposet finished by an auriel exercision cannot be exceeded, much loss described. Not do assume the exceeded to the least of that gliddines consequent expenses the proposet of the proposet of the same than the contract of the proposet finished as a similar to the proposet of the proposet of the same than the contract of the proposet of the proposet of the proposet of without finding the last inconvenience over the against on of the wind, for the reason that the machine nor work to be within the contract of the colorier."

The following is an extract of the most important part of the journal kept on the occasion:-Left the earth at two o'clock thirty-five minutes; the lower current of wind from south-west moving moderately. At three e'clock, I passed on the south side of Mechanicsburg, et an eltitude of about a mile, end still according. When at a considerable height above the clouds, another current blowing from north-west was encountered. This gave me an opportunity of making north or south latitude while pursuing my voyage castward, as the occasion required, by sailing with one or the other of these currents. While nearing the Sususchanne liver a magnificent view was opened; York, Carlisle, Harrisburg, and aven Lanesster, were embraced in this grand panoramic view, with all its januarable villages and variety of splendid scenery. Upon its beauty I will not effect to descant: it must be witnessed to be appreciated. Although the Creator has allowed me to enjoy this sublime privilege, he has not endowed my humble especity with language adequate to express its grandeur. In viewing this scene of earthly glory, I was forcibly struck with the idea, that we are not of near so much importance in the eyes of Deity as man presumes himself to be; and not more so to the Creator than the minutest animalcule is to man. And now, ia reference to the puerile fanaticism of "Millerism," I would remark that the world, clothed in her verdant summer carb, looked so young and so beautiful, and so far from having the slightest appearance of decay, or an intention of committing suicide by elementary self-destruction, that she reminded me of a gay and blooming maiden just emerging from the days of her innocence inte sober womanhood. If any of the deluded followers of Miller doubt this, let them go aloft of a fine summer's day, and view the earth, and if they then don't abandon their nensemical views, nor feel ashamed of their narrow-minded conceptions of the goodness and greatness of the Creator, they must indeed be weak in the spirit as well as in the flesh.

[The Miller fanaticism was raging at that time in the neighbourhood.]

At these vicies twenty minors, I passed sure a real body of clouds, which reflected a powerful best against the ablusion, ensuing its to rise to any table legist while in the field of reflected rays, such furthers, obecuring from yo view literarburg, and to the sorth, so fir as York, the whole of the country. The current below, however, being nearly et right angle in its direction to that cloudy, ensurely, some discard the speece beaseful any, you cannot be very large in its direction to that cloudy, ensurely, some discard the speece beaseful any comes now hay down the vert sole of the river. Seeing the seconity of making more sock illustrates in order to read may port, until a griet star marched workly were the most of Crisona Cross, I was self-a flowed-sized into be lower correct, coming from the sorth-west, by which I could reach a point some the city of Lamonton, which we Lamonton, which we consider the contraction of the cont

rich and poor, intermingled with trains of music and the ringing of bells, I was some enciroled by my fellow-claims of Lacouster, into whose entody I most describilly submitted myself, and will now let the balance of this interesting experiment be detailed by my old and extremed friend, John W. Forney, Eq., of the 'Lancoster Intelligence and Journal,' who was an ope-wittoes of the scene.

### BEAUTIFUL AND INTERINTING SPECIACLE.

"About a quarter before four whole on Standay hart, a block speck, so begar than a smal' hand, was see a limite borthwest of the day. Some parameter of tear of Miller's signs—some observed it to be a new and unreceded phenomenos—and while all were thus arguing as to its character the speck grew larger and large, until, at last, the impossion began to presult that it was no less a pressage than the great arcentage of terms and the special section of the special section in which all the charges so dispersion of the special section of the special s

" Supposing all to be over, the curious spectators retired; when, about five o'clock, the whole town was again astir to witness the aeronaut's triumphal entry into his native city. This was a singularly novel and interesting sight. Standing in the cur of his balloon, the huge globs above still distended, almost teaching the sides of the bouses, and apparently eager for flight, he sailed through the streets at a slight alevation from the ground; his airy chariot drawn, or rather guided, by a number of young men and boys who had attached themselves to the rope which led from his ear. In this way, with hat in had, and smid the cheers of his fellow-citizens, Mr. Wise passed through West King Street, and halted in Centre Square, immediately fronting North Queen Street. Here he was again greeted with the cheers of the people; but the sport was not yet over. After a rest of about fifteen minutes it soon became evident that Mr. Wise was about to attempt an ascension from Centre Square !-- a rather contracted area, by the way, and too much walled in with houses, we should suppose, to make e balloon ascent either safe or pleasant. But Mr. Was is not one of your holiday soldiers-his whole demeasour on Saturday proved him to be cool, collected, and intrepld, oven to a fault. Having divested himself of nearly all his clothing but his pantaloous, even to his shoes, and detached the car from the bulloon (the gas having been expended so much as to render the balloon incapable of carrying a heavy load), Mr. Wise took his sent on a narrow board ettached to the cords of the balloon, and giving the signal to 'let go,' away he shot like an arrow from e wellstrong bow, and nearly in a straight line, leaving behind him handreds who were amazed at the singular boldness of the during feat. He ascended, we should suppose, nearly a mile, and was fast fading from sight, when he began to descend, and actually alighted about two squares from the place of starting? This unparalleled performance was accomplished with great case and rapidity, and proves Mr. Wise to be an able and experienced acronaut."

After any Cultifus securion I gain appeals I may plicate for that maintains to realise no to cury out the Transculatio project, but par to further with them than a premise to premise appetition, which I had determined to by before the next Congress. Believing that countiling would certainly come out of that, and theye boding shock in matrice of this had, I descend I talevalue to make a certainly come out of that, and theye boding shock in matrice of this had, I descend I talevalue to make a certainly come out of that, and theye boding which I have braveledy found shows, there does not consider that the considerable with the considerable preference, and extensive which I have braveledy found shows, below clear amound the surple, all it wrongs arross the Athatin insight subject the navigation to be current and extensive, and at best to all the considerable preference, and enforces reconsiderable student upon all flexi trial of this nature; consequently, there should be a general knowledge alread, community which the holy in single of the should come to the industry, office art for any came which worth the community when the high shaded for the should come to the industry.

I prepared the proclamation, and hamled it to Mr. Forney, of the 'Lancaster Intelligencer,' who prefaced it with his own remarks; and a number of speculative commentaries were written by other persons concerning it as it passed through the newspapers. Some of these will be related; and it will be observed how difficult it is, in looking at new projects, to separate the ideal from the red merits of the case. However, the proclassion has gosforth in the world, and the advisace of it will follow, instea so crains as steam followed horse-power.

#### AFRIAL VOYAGE ACROSS THE OCTAN.

"The fallewing assumements of Mr. Wiss, the distinguished ceroston, is one that caused fall to excite publish detention in a very grant degree. Though the scheme may look consweller (durintly, we have a both Mr. Wise possesses the acres to attempt, and, we balives, but the skilling to carry it set. Our New York friends, therefore, must are the assistanted to so our intelligent and viscation constructs arrives in their clays and year with his 'legen balloon,' and take his departure thence for the regions of the 0.01 World. World it not traves a virt that well for accorded to reception of a hamberd Travelant, hopoly every may see ver a Tyler' 3 and then what a sensation he would prodone in England, so, eming shong the Chanacl, he mode preparations to settle force has settle charter in the heart of the grant Landon Well 1; or unioning this require in the depart of the grant Landon Well 1; or unioning this cappen his worked into Constructions of Paris, or Chalacce Phothesia, or, ping further arill, suppose him without into Constructions, the product of the contraction of the contract

" Mr. Wise speaks for himself, however, in a tone of easy confidence that will surprise no one who knows his courage and resolution;"—

"J. W. FORNEY, Esq.—You will confer a favour to the enterprise in contemplation by giving the following proplamation publicity for general notice to the civilized world,

#### TO ALL PUREISHERS OF NEWSPAPERS ON THE GLORE.

"Languater, June, 1843.

"As it is my intention to make a trip across the Athantic Ocean with a balloon, in the summer of 1844, and so the detected or handling of balloons, in my axperience, has almost universully created unknecessary sharm and construction to the people near by. I therefore give this general notice to the senforing community of all offlines, that should they, during any time hancefurth, chance to be in the vicieity of a balloon, either on the overan or in the strong-plere, that panel and to make a gray facult apprehensions, but enclassers to give and to its devastances.

"It must not be infarred from this that its success is considered improbable, but merely to be prepared for all emergencies.

"Having, from a long apperience in sevenantics, here convinced that a constant and regular current of are in labering as all times from set to are old at a wholey of prince topy to form, of men along along per low, according to its height from the earth; and having discovered a compatition which readers all or a most imprivation to hydrogen gas, no that a fullow may be loyed that fir many weeks, lefel confident, with these abstrategas, that a trip servos the Athatic will not be attended with as much real danger as by the common mode of resultion.

"The balloon is to be one handwel fort in diameter, which will give it a set seconding power of twenty between depended onlying maply sefficient to make everything and send constraintd. A essecurity tool is to be used for the cur, which is to be depended on in sees the balloon should full to accomplish the veryoge. The best is also activated on in sees the regular current of wind should be divested from its owner by the inflames tool in also activated on in sees the regular current of wind should be divested from its owner by the inflames to the count, or through other causes. The crew to consist of three persons—wise, as secondar, a see saveignor, and a scientific inclusion.

"Therefore, the people of Europe, Africa, Asia, and all other parts, on the ocean or elsewhere, who have ever seen as hallon, will bear in moint that it is a large globe made of ecitoh, encorecci in a network, with a sloop hanging anderweath it, containing the latest news from the United States, and crew of the world's obedient servant."

This announcement was generally published throughout the Union, and throughout civilized Europe: and although its substance has not yet been accomplished, its postponement is attributable to a single course—want of

pecuniary mome to do it syld. If Congress will not give the small appropriation necessary—ten or fifteen thread dollars—to give it affect (I will not say to make an attempt, because its consummation is as certain as that a suil-ship can do it), our wealthy morehants of Philadelphia and New York cities should take it in band, sizes it would enhance their facilities as unuesh.

The fellowing is another among the many connectative that were clicited by the anomacoust and, and though it breastless a progressive and solvel-unspread spirit, it is neverthedean strongly interured with an inseparable sentiment to common to human nature, which undervalues projects that commands from process when it is infinistedly contained with, and who have ware yet accomplished general networking. However, the active is infinistedly contained with an other houses are not specificated with a relative contains as much good round sense along with 1st humans and troop, that I will elsewfully hear the latter in consideration of the former, and publish if its value it is worth.

#### BALLGONING EXTRAORDSNARY.

"That daring asd (on the phrase good) intropid acres and, Mr. John Wine, of Lancester, has invested a formal preclemation to the work, amonosing that in the entermed 17 life the contemplate making a laboles recogn sensor that Athatic, having from long experience in necessarion become permaded that such a mode of transition in not pleastleb, but strated with flowers risk than those in collating was. He doesnot fait intellay stated due to the article and the seafering community, who, in looking abelt, may chance to describ him in the clouds, and who might otherwise be induced to due had a wonder? of the gas

" But, pray, why should not a trip across the Atlantic, in use of these silken cloud-coaches, be entirely practicable? To se, it is true, the project may look like the effervescence of a disordered intellect, and we may decry the undertaking as part and parcel of the impossible; but how many years is it since the mrs who first threatened to cross the ocean in a simple steam-carriage, with no sais, but a kettle filled with boiling water, was laughed at as a creature fit only for the friendly ministrations of the keeper of a mod-house? A shaved head and a strait-waistcont were the premised rewards of the original projector of that most noble enterprise. And yet the foaming billows of the great deep are at this day hourly plied by the rushing steamship, bounding and puffing recklessly along, as though it were itself the victim of the madness ascribed to its projector; but landing, nevertheless, its precious freight unharmed upon the distant shores. Now, if such stupendous and astonishing results here less realised, what may not man, under the irresistible dominion of the great master-spirit of the age, Progress, what may be not accomplish? If the one event has been taken out of the narrow bounds which encircle the diminished catalogue of impossibilities, and has only, like the rising and setting of the sun, ceased to astonish because of its familiarity, why may not the exercise of human effort also consummate the other? And then, after Mr. Wise shall once have anccessfully pioneered the perilous pathway, and demonstrated that fewer lives are lost by travelling in balloons than by steam and canwas, why should it not ultimately become the universal means of locomotion's Why not, under the guidance of skilful and experienced air-anyigators, also adapt balloons to the uses of commerce. as a means of import and export? If men, women, and children can be suspended for weeks over laud and so, in vessels of silk upheld by gas, and ultimately reach in sufety their places of destination, why not also thus convey the chosen product of every land and clime? Why not bollow a load of cotton at Charleston, and in a few days receivs the vessel 'bock agen,' freighted with British cloths or a eargo of teas from the 'Celestial Empire.' And then, too, such a 'reform' would spare to our trusty and well-beloved benefactor, Uncle Sam, the necessity of maintaining at such a heavy expense the Navy, there being no longer any use for ships and the like, although it might in turn almost subject him to the almost constant tricks of smugglers, owing to the uncertainty of the landing places. If, therefore, we have not ourselves been all this time engaged in building 'air-castles,' Mr. Wismay yet be destined to sorr sleer the fame of such common men as Robert Fulton and Oliver Evana."

Another writer says: "We publish below an announcement of the enterprising and intrupid aerial voyager.

Mr. Wise, preclaiming his intention of crossing the Atlantic in a balloon! We are not prepared to express an opinion as to the featibility of this project, but we do not doubt that Mr. W. is ready to attempt it."

Such were some of the numerous commentaries and opinious upon this contemplated expedition, which yer to give the arts impasses that will waken it to its real merits. The following better, received by the observed until, post-marked "Novematic, Dularum, June 28th," shows that there were not wanting proper persons recessary for for the original time under skillful management :—

MR. WHE:

Six,--Perceiving by the newspapers that you meditate on attempt to cross the Atlantic Ocean in a balloon next year, and that it is your intention to have with you a scientific person and a navigator, and as we heartily

enter into the spirit of your enterprise, and at the same time place every confidence in your ability to complete the undortaking, we cheerfully offer you our services in the latter capacity (that is, as navigators), If you should conclude on accepting of our company, we are in hopes you will inform us at as early a period

as possible, so that we may signify our wishes to, and obtain the necessary permission from the Navy Department. Very respectfully, your obedient servants

> Ancet. M'RAE. SILAS BENT. Passed Midslipmen, U.S. Navy.

On my return to Carlisla it was determined that I should be requested to repeat the experiment, as the first had only enhanced the desire for a second in those that witnessed it; and many people from the serrounding country who had not seen it were now very anxious for an opportunity of witnessing such on achievoment. Consequently the 17th of June was appointed for the oceasion

One of the nowspapers prefaced the narrative of this voyage in the following terms: "Our own thoughts were a good deal bent toward Bunker flill on Saturday, hat nevertheless we had on the same day in our own town a spectacle of an elecated character, and of a thrilling and exciting interest. As upon the former occasion, Mr. Wise's forty-first ascension with his balloon draw together an immense concourse of the 'beauty and chivalry' of Comberland and Perry counties. It is not necessary to say more than that it went off with the greatest éclet, and seemed to have given the highest gratification to all who witnessed it.

"We are indebted to Mr. Wise for the narrative of his aerial voyage, which is subjoined. It will be seen that he encountered insuperable difficulties, and not a little danger, which brought him back to earth again after a trip of a few miles. Mr. Wise is to be congratulated on his safe and fortunate escape from the dangers of that 'long, low, black' clond, which from his description one might judge to be the very dominious of the evil 'prince of the powers of the air.' The narrative possesses much interest."

#### NARRATIVE.

According to announcement, I started on Saturday last on my forty-first aerial exonosion, from the Contre Square of Carlisle, at precisely fifteen minutes past two o'elock in the afternoon, it being the 17th of June, 1843. A elight breeze from the west wafted me e short distance in its direction horizontally, after which the ascent became nearly perpendicular until the height attained was about 2500 feet, when the balloon moved off towards the cast with a velocity much greater than that of its ascent. The first thing that drow my attention was the immense occur of heads that was presented in the square below. There appeared to be infinitely more people on the immediate ground then was usually the case; and the whole scene was rendered highly enimated and imposing by the fine appearance of the military, and their repeated salutes of thundering artillory at the departure of the "Comet." When I had reached a point about two miles cast of the town, there appeared, a little distance beyond and above me, a hogo black cloud. Seeing that the herizontal velocity of the balloon would carry it underneath and beyond the cloud, rising slowly as it did, and being desirons to gratify the spectators with the novelty of seeing a balloon pass through a cloud, preparations were at once made to effect it by throwing out some ballast as soon as its border should be reached. Harrisburg was now distinctly in view, and the balloon moving directly for it; I was besitating, with the bag of ballast in my hand, whether I should throw it out for the purpose designed, or continue straight on as I was then going, to the place just mentioned. At this time I had reached a point underneath the cloud, which was expanding, and immediately felt an agitation in the machinery, and presently an apward tendency of the balloon, which also commenced to rotate rapidly on its vertical axis. I might now hero discharged gas, and probably passed nudernesth it; but, thinking that it would soon be penetrated, and then might be passed above, as it appeared not to be moving along itself. I made no besitation in latting the bulloon go on its own way. This part of the feat, however, I had reason to regret soon afterwards; although at the present time it gives more real pleasure in contemplating its terrific grandcur and reality, then anything that has ever transpired in my serial adventures. The details that shall here be given of this terrible scene may be relied on.

as I was sufficiently composed to appreciate its grandeur and observe its physical operations. The cloud, to the best of my judgment, covered an area of from four to six miles in diameter; it appeared of a circular form as I I cutered it, considerably depressed in its lower surface, presenting a great concavity towards the earth, with its lower edges very ragged, and falling downwards with an agitated motion; and it was of a dark smeka colour. Just before entering this cloud, I noticed, at some distance off, a storm-cloud, from which there was apparently a heavy rain descending. The first sensations that I experienced when entering this cloud were extremely unpleasant. A suffocating sensation immediately ensued, which was shortly followed by a sickness at the stomach, arising from the eventing, swinging motion of my car, causing me to vomit several times in quick succession most violently, which, however, soon shated and gave way to sensations that were truly calculated to nentralise more violent symptoms than a momentary squasmishness. The cold had now become intense, and everything around toe of a fileous nature became thickly covered with hoar frost-my whishers jutting out with it for beyond my face, and the cords running up from my car looking like glass rods, these being glased with ice and show, and hall was indiscriminately pelting all around me. The cloud at this point, which I presumed to be about the midst of it from the terrible ebullition going on, had not that black appearance I observed on entering it, but was of a light milky colour, and so dense just at this time that I could hardly see the balloon, which was sixteen f-ot above the cur. From the intensity of the cold in this cloud I supposed that the gas would rapidly condense, and the balloon consequently descend and take me out of it. In this, however, I was doorsed to disappointment, for I soon found myself whirling upward with a fearful rapidity, the balloon gyrating, and the ear describing a large circle in the cloud. A noise resembling the ru-hing of a thousand mill-dates, intermingled with a dismal mouning sound of wind, surrounded one in this terrible flight. Whether this noise was occasioned by the hail and snow which were so fearfully politing the balloon, I am unable to tell, as the meaning sound must evidently have had another source. I was in hopes, when being hurled rapidly upward, that I should escape from the top of the cloud; but, as in the former expectations of an opposite release from this terrible place, disappoint ment was again my lot, and the congonial surshine invariably above, which had already been anticipated by its faint glimmer through the top of the clouds, soon vanished with a violent downward surge of the balloon, as it appeared to me, of some landred feet. This only subsided to be barled upward again, when, having attained its maximum, it would again aink down with a swinging and fourful velocity, to be carried up again and let fall, which happened eight or ten times-all this time the storm raging with unabated fary, while the discharge of ballant would not let me out at the top of the cloud, nor the discharge of gas out of the bottom of it, though I had expended at least thirty pounds of the former in the first attempt, and not less than a thousand cubic feet of the latter: for the balloon had also become perforated with holes by the joicles that were formed where the melted snow ran on the cords at the point where they diverged from the balloon, and would, by the surging and swinging motion, pierce it through,

more a present control, and the control of the control of the incident of other, not within the part of the final of the stands, controlling in the variety service of the stands, controlling the twenty controlling the controlling the controlling the controlling controli

The density of this cloud did not appear alike all through it, as I could at times see the ball-on very districtly, show me, also, accessionally, pieces of paper, and whole newspapers, of which a considerable quantity were kelven out of my car. I also ne-licod a violent convolutionary motion or action of the vapour of the cloud going on and a promiscones scattering of the hall and now, as though it were projected from every point of the compass.

Such is the history of this short hat magnificent trip; and 1 can assure my readers, that when 1 again meet

clouds of this character (which I shall name the "cloud of terror"), I will endeavour with all my skill to avoid them.

After this account had been published, and found its way into the newspapers, I received the following letter from Professor Eapy, at Washington City, which was promptly answered >---

" Drae Str., "Washington City, July 5th, 1643.

"Data bit,
"I was much interested with the account you gave in the public papers of your balloon ascension, on the
17th of last month, from Carlisle,

"You will confor a great ferour on no if you will assert the Calevining questions. Was there any nise or half at the service of the servit books the door book high you extended. Easily, you decreased through the base or lower specified of the cloud, or did by one given it from the cloud into which you exceeded arounded by these sky, or we take who ked specered with clouds. Then you are you are to think there was an upsnowing current of wir going up into the base of the cloud, and confusing in the cloud into left of roll or you request of our money current our with the housest power of the followin." What was the cause of your request of continuously composed with the housest power of the followin. What was the cause of your areas of isomorphic gight or the times, and how did you judge that this assembling and descending really assembling and descending really as the same beingful. Or out to well? A way one one your follows one term by the half? I or sight not by how the same beingful. Or out to well? A way one one your follows one term by the half? I or sight not by new seconded unth higher by a very rapid motion than you supposed, and your gas have escaped by expansion through the bottom of the halfs.

"If there was a strong current of air under the cloud and in the cloud upwards, might you not in the time have gone so high as to diminish the pressure on your body so rapidly that part of the noise which you heard was the ringing of your cars? And might not the sickness have been from the same cause?

" If you find time to answer any of these questions, I shall be much obliged to you.

" Yours, very respectfully,

"JAMES P. ESPL."

When Congress had assembled at Washington, the following petition was estimated to their consideration; and when we take in triew the small amount (10,000 dollars) it would have taken to prepare the experimental couffi, backed as it was by comprete notherity; it seems little encouragement in to be expected from that quester, in any new enterprise, no matter low plausible, maless it curries with it seems pertians force and object, calculated to promote aspiring and factions individual interests in new colitical fertures.

TO THE CONORDS OF THE UNITED STATES.

To the Honourable the Senate and House of Representatives of the United States of America in Congress assentled :-

The petition of the subscriber, citizen of Lancouter, Pa., most respectfully showeds, that, from an experience of number of years in the practice of erromated by the subscriber, is has been fully demonstrated that exists in the atmosphere a constant current of wind, moving from west to east, with a velocity of from twenty, forty, and even ristly unilso per hour, according to its highly from the carrier.

This current is moving in that direction, while the local currents may be, and are, moving in various other directions. This arthurd current is governed by a great general cause, blowing et all times, making it feasible to travel the globe in that direction by a serial machinery with great facility.

Your petitioner would farther state that the art of making aeronautic machines has been so far improved that they may be kept affect for any reasonable length of time, even for years, and as long as a ship can be made to endure the sea for commen purposes.

The main object of your petitioner is, to bring into useful requisition, for the purposes of speedy and safe transition of persons and merchandise, that great natural and unoccupied alament, the atmosphere.

Your petitioner does not pretend to have discovered or solved any great, newfangled problem; but would most exmostly press upon your consideration known facts, which must be explored before any great benefits can be derived thereform.

From the improved state to which accountio machinery can be perfected, and the advantages continually at hard from the local currents of air, it is even now feasible to travel eastward with a velocity that will circum-navigate the globe in from thirty to forty days, with an ability to vary from a straight course thirty or forty are.

degrees from the latitude of departure, which would enable us to leave despatches in Europe and China, and setern by way of Oregon Territory to Washington City.

This has been demonstrated by experiments made by your petitioner, in reaching points sixty and ninety miles distant from the place of departure, with a precision not surpassed by ship-sailing, aided by the local corrents in varying from the great eastward current,

From these considerations, your petitioner is induced to ask your hononrable bodies to make a naval appropriation to carry this project into practical operation; its practicability having already received the confidence of scientific men, and an cornest and voluntary offer by several officers of our navy to accommany the first experimental advanture.

Your petitioner, therefore, prays you to make an appropriation for an outfit to this effect, viz.: The construction of an aerostat of 100 feet in diameter, of sobstantial demestic cotton drilling; a sea-boat capable of endering the ocean, for a car, and so constructed that the masts and rigging may be stowed away, ready for erection into sea-service at any time that emergency might require. The sea-boat to be of 10,000 or 12,000 pounds weight; an acrostat of 100 feet diameter, having an ascending power of over 25,000, which will be sofficient to carry the outfit and erew.

Should this meet with your Congressional approbation, your petitioner will readily submit a plan in detail, and will cheerfully superintend the construction of the machinery at his own expense, asking nothing more than the command or directorship of the first experimental aerial voyage round the globe.

The whole cost of the experiment will not be more than a fraction of that of the late " Exploring Expedition;" and promises, at least, greater results,

For a favourable decision of your honourable bodies, your petitioner feels in duty bound to pray. Jone Wise.

Leneaster City, Dec. 20, 1843.

This petition was received, read, and referred to the Committee of Naval Affairs, where it sleeps, soon to be awakened up again by the occonquerable force of human destiny.

1844. - Depuis Delcourt, an editor of a Parisian journal, having made his first ascent in 1824, zealously pursued his experiments till 1850, when he published the best history of the subject that has yet been written. He proposed to attempt an experiment this year with a large copper balloon, but never got beyond its construction. The necessary calculations were, I think, made by Mons, Marey Monge. This year also saw the first ascent of Mr. Coxwell, under the name of "Mr. Wells," to prevent anxiety among his relatives. He is the son of the late Captain Coxwell, R.N., and was born near Rochester, 2nd March, 1819; received his elementary education at Chatham, and was intended for the army; but, being disappointed of his commission, at the desire of his mother he became a surgeon-dentist. Finding his attention strongly attracted to aerostation, he thenceforth gave his whole mind to the subject.

The 'Register' newspaper of Hollidaysburg, Pa., thus records an ascent by the indefatigable American aeronaut, Mr. Wise, in May of this year :-

- "The ascension of Mr. Wise, in his new and beautiful balloon 'Vesperas,' took place on Saturday last according to notice given. The day was entirely too stormy for an undertaking of the kind, and, in the opinion of avery reasonable man, would have justified Mr. Wise in postponing the adventure; but, trusting in the excellence of his vessel and his skill as an aeronaut, he determined to make good his appointment and to satisfy every individual of his nomerous audience. He accordingly, after a most laborious and oftentimes discouraging effort, succeeded in sufficiently inflating his balloon, and getting ready for the voyage, and at the hour appointed cut
- "The ascent, although evidently hazardous, from the rupture in the network by which he was attached to the balloon, and from the unsteady and squally state of the atmosphere, was sublime beyond description. When the cord was cut, he rose slowly from the arena, barely clearing the top of the enclosure, and taking a northern

direction he wept across the town, just escaping the house-tope; let, discharging a rough of such of ballant, be soon mounted high into the serial regions to minghe with, as we supposed, the less sugry elements aloves. But in this we were ministants for, long before the Vesperon' was cost of sight, she was observed to be rocking strangely, as if the elements were no more friendly with her in her clerated position than when bound to earth. The secont subjected by Mr. Who, gives a full history of this part of the adventure.

"The secret of a billow in a spectacle that to be railised used to witnessed. No description can evary a jump take of the millaring and benny, as this some creaters of life, it mostly and sitely, and strailly nominal upwards, with its gallers also glittering in the rays of the sm, and its tipy backs and well-serranged orelapse arrivinging proceedily possessed. And then as the interpal amount waves his at at a facilitation and other as fair trapears to take and damma below, and every branch knew design with the ordering movimes of more after trapears to take and damma below, and every branch knew design with the ordering movimes of more and the strain of the strain o

"We need only add here, as the evidence will be given again, that Mr. Wise's conduct on the occasion was highly satisfactory to all concerned, and must greatly increase his reputation as an aeromant; for we venture to say no other individual ever attempted an accession under like unfavorable orientantances.

"At about eight o'clock in the evening we heard of his return, and, repairing to the U. S. Hotel, we found Mr. Wise, somewhat disheavement about the loss of his balloon, and locking rather wones for the trip—his outer man having enforced considerably from his adventure among the branches of the tree on which he locked."

## Mr., Wise's Narrative.

The process of inflation was commenced at eleven o'clock a.m., under very disparaging circumstances, as the elements had combined from all points of the compass to a general and boisterous storm. Nothing, in short, but the most indefatigable energy and perseverance on the part of Mr. Downy and Mr. Woods, who had taken a most important charge under their hands, that of keeping the " Vesperus" to her place, could have enabled me to have made an ascension under such a war of the elements. During the process of inflation in the beginning, the reaction of the gas from the balloon, caused by a andden flaw of wind, blaw off the gas-meter, which was soon replaced by my energetic friend Mr. Hinkle, and the inflation resumed, but under so much violence of the apparently frantic gamboling of the "Vesperus," surging to and fro the persons who were holding on to it, that I began to fear of their ability to endure the rough usage they were labouring under all the time, sometimes being partly raised up and then dashed to the ground, as by a maddened steed. However, after getting the assurance of those gentlemen that they would hold on, to use their own words, " to the last ribbon," I retained my confidence in accomplishing the accusion, until I received the heart-sickening information from my friends that the network was fast giving way about the top of the belloon. I now began to give up hopes of getting up, and even feared that the balloon would break through her traumels and escape; but Providence sent a gleum of sunshine, with a short abatement of the storm, during which time a good supply of gas was worked into the "Yesperus," sufficient for a long voyage.

At precisely three minutes part we o'clock, I meanted the car, and having ballasted the vased while it we notationed by a cost, fieling, as I supposed, the rapture in the network horsasing at every surge, which by this time had got so large, that a bulk as big as a hogshead was protending through it, my preparations were speedly completed. Knowing now that time was partiess, I cut the rope and gave my friends below a parting sallest, which was heatily proposed to by a domand voice.

When about 1 began to comparation rayed upon the vietney that was guisal ever such familiable cleatedes below, and file a component that the actives would said it indeed you, on the ballow was fire in the air. No took a sort-buryl direction, ascending rapidly all the white, sutil on altitude of about a sull was attained, where a visiting glav semecented which make the ballows surge off in an assistiely direct, we arring the not a nonfin, and nating the network reads at every surge, which theread was about up presend addy. Locking over the first and the surgestiant of the surgestiant that the surgestiant is a surgestiant to the surgestiant that is a thin insurate influence with studding that the actured and our to right year and up remaining were raphed allows and the surgestiant that the surgestiant is a surgestiant to the between its avery direction, as council as flowed the classiculating the contraction of the surgestiant to an order of the surgestiant that the classiculation of the surgestiant that the surgestiant that the classiculation of the surgestiant that the surgest escaping from the network in a very few more surges. I could see the valleys west of the Alleghany Mountain, on which the sun was shedding its beams of light and life.

I looked up at the balloon, and it senseared to me that the car was receding from it gradually, by the giving way of the network, and at this crisis an expedient flashed across my mind-the valve-rope would bear the weight of a hundred pounds, and the top of the balloon was equally strong-my weight was thrown upon it at once. This necessarily opened the valve to its full extent, and must seen bring the machine down to the ground. The velocity of the wind was about fifty or sixty miles nor hour, and, between this and a rapid descent, terre from was reached about sixteen miles east of Hollidaysburg. As soon as practicable an anchor was thrown out, which granuled in a fence and causized it, when the machine bounded across the field, where it caught in the next fence but broke it, carrying with it a fence-rail, causing the car to bound and rebound from the earth and dashing headlong into a very rugged piece of mountain woodland. At this juneture I clasped several of the net cords in my one arm and made a spring overboard for a fence that was intercepting my path, and unfortunately for me, at the same time the rail was leasened from the anchor, when the balloon rose with a sudden bound-my body outside of the car-one foot fast in the rigging, and my arm elasping several of the net cords. My right hand was still free, with which I quickly grasped the valve-rope which had been tied to the rim of the car, and secured it in my teeth, holding the valve open, when in another moment I found myself dashed into the top of a high tree, where I quickly grasped the limbs, still clasping the cords in my last arm. This brought the balloon te for a mement, when with my right hand a hitch round one of the limbs was taken with the anchor rope. This was followed by a squall of wind which warned me to release my arm-hold of the cords, one feet still in the car, when, te my ntmest dismay, I found my foot tangled in the rigging. There I was, belding on to the top of the tree with a death grip-head down and feet up, the balloon surging and drawing the top of the tree which I was holding to in the direction of the squall, only chating momentarily for a more violent surge; and I could no longer keep the valve open with my teeth, the rope had become too long, and I could not take a sherter hold, in the dilemma, without incurring another risk-that'of letting one hand loose from the tree-top; but things were growing desperate, and I made a violent but successful effort to loose my foot, at the same time grasped the valve-rope in my hand, and in another moment a terrible erash indicated the halloon was off-having broken the encher-rope, and jarked through my hand the valve-cord, burning it as though a hot wire had passed through it, and I left hanging in the top ferks of the tree where I had fallen.

As soon as I had received a raw-oning position, I boded operated only into with bellion doubling furiously off and appears into a done lacks close, lose distance to the net-beat. In referring to symmetry, and that I had taken nunecosary alony; the enthing unless of the network must have arises from the surging notion of the hallon, for the network had goes through double the force into hading, and not not off yet, persping that it was all-efficient to have been fit bod to the declaration; which greatly enhanced my chaptin, since the wind only washer of a strength of the strength of t

After selikequising in the tree-top a while upon the day's adventure, I thought it time to come down, for I was user a hundred feet from the ground, leaving part of the anchor-rope daugling in its top, as a port of entry for the next atorial traveller who may chance to lead there.

Within a few waks afterwards I beared that the "Veperus" had landed, the same day of her departure from Bellahyshepts, but higher six elocks, on Mr. vs. vs. Valenchepts; field in the takalible Momentaris in its Sami of New York. I repired thinker and recovered the bulken. The persons in the neighborhood were much assimilated at its arrival, and has we under mannelmable apprehension they were induced to examine it. Mr. Vene and upon seving it in the six thereby the term of the six of the person of the six of the and who profused to be well informed in such matters, out it is in that manner for them. The shrubbery which had been truined around the one before it started, had turned entirely black, showing that it had been in a high fruity atmosphere. The balloon had no doubt burst from the axpansion of the gas, which caused it to come down no scene.

Before I took it away, all these wonderments of the people were explained to them, and they expressed a great desire to have an exhibition of such a novel kind in their neighborrhood. This machine was fixed up again, and after making a unmber of trips with it, two from the city of Columbia in South Carolina, I sold it to a centleman of that State.

1845.—Mr. Coxwell lawing now come forward publicly, turned the energies of his mind to this science, and, with characteristic industry, started 'The Balloon or Acrostatic Magazine', to elicit opinious and suggestions from any one, as well as to communicate his own. His undertaking met with the approbation and encouragement of the press, and his journal appeared occasionally till 1859.

In an ascent this year Mr. Charles Green's father, a gentleman eighty-three years of age, was one of the party.

1846.—Mr. Green made his second proposal to cross the Atlantic. The following are the notes of an ascent from Mr. Wise's log-book in this year:—

Aumal Loo-book of Fifty-fourth Atmospheric Voyage. Balloon "Rough and Ready."

West Closter, Pa., August 8th, 1846. Four o'clock fifteen minutes, atarted with a southerly breeze, at the rate of twenty-five miles per hour.

Four colock twenty minutes, atmosphere to the seath and east perfectly clear. Can see Philadelphia as distinctly now as it has been seen at other times when not more than three miles off. The rain in that direction has cleared the atmosphere. See some suits on the Polavara—sum shining against them gives them a golden has —vessels as distinct to my rive as though I were on the river bank. Four c'elock thirty-fee minutes, rumbling thandor to the far north. Four c'elock for-free minutes, concell Pomarylvania milriand.

(It may be here observed that the balloon was sailing towards the north-seat, and a thundergrast was moving from the north-west, about fifty or sixty miles to the north-west of me—thes moving et right angles with each other, and the remarkable result of the balloon meeting the storm at the point of intersection.)

Five vicles, but sight of Wort Couter. Cause fowen now within good speaking discusse of the earth, and no for that the Dalvauva vanished from twe. Thousing regular [color row, but as lighting promptles.]
Tabling to the people below of I possed along. Dep backing at the halton, and positry discussyd in the harmonic, keeping an alonsing elasters. Distributing newspears to proceed below, who can sad pict the only a color of the process of t

Five o'clock ten minutes, crossed Schrylkill above Norristown—threw out ballast sed ascended very high. Can see all around to a great distance. Phoenixville, a little up the river. Going too much east to reach Reading. Come down again to within good speaking distance of the earth.

Five o'clock twenty minutes, near the Trappe, and over the Reading and Philadelphia pike. Invitations from all around me to "come down;" three over some newspapers to the people—inquired if I could get supper there. "Yes, anything you want." To oup the climax, one of them sang out—"Come down, and I will gave you a bestle of brands," "Thank you, six ; prival enough; I believe I'll gos a little further."

Five o'clock thirty-five minates, thundergest approaching the track of the balloon. Low enough to hear the wind rustling in the trees. A great many persons following the balloon. Some give up the chase; others strike in with fresh vigour.

Five o'clock forty-five minutes, moving parallal with the Norristown and Samanytown road. Storm and balloon converging to the same point—vivid flashes of lightning were now occasionally to be seen in the north. Five o'clock fifty-five minutes, a man on a black horse in hot pursuit up the road—horse's head and tail in a straight line. The race is beautiful and exciting. He is losing ground every jump. Now he helds up a mile behind.

Six o'clock, and moving over a thick wood. Here I ceased taking notes-the car was near the tree-topsthick woods underneath, and a roaring thanderstorm just ahead. Already its commotion was acting on the balloon, and it would not do to seek shelter among the trees below, and yet the alternative was to do that or sail right into the feeth of the storm, for there was not ballast enough left to essue an ascent above it before getting into its midst. Indeed, it required all my ballast to keep above the tree-tops until the woods were passed, and this brought me right into the thundergust. A number of persons were following me from the woods afoot, but they could not keep pace with the balloon, falling back three-quarters in the mile. As soon as a clear spot was attained the anchor was threwn out, and the moment it struck the ground a vivid flash of lightning hurled the balloon against a tall oak-tree. What appeared to me remarkable in this was the absence of a report, but the fire flashed from my car and flag, the latter harled out of the backet where it had been stock in the wicker-work. This flash reminded me of the sparks that fly off from a piece of white-hot iron just taken from the forge on the anvil, and struck with the blacksmith's hammer; and the noise was very similar to that also. Just at this moment a young man was running to my assistance, intending to eatch hold of a drag-rope which I had thrown out and requested him to take and make a hitch to a tree with, of which there were plenty around. But the flash brought him up suddenly, and unde him stand aghast, and immediately retire. The balloon was now taugled in the oak-tree, and the smoke I had observed at the time of the flash, which, with the sulphurous smell, had alarmed me, was the gas issuing from the breaks it received against the scraggy branches of the tree. Fortunate it was that there was no escape of gas at the time of the electrical flash, or an explosion might, and would, in all probability, have been the result.

The persons who had followed me from the woods, now came up, and before we could rell up the balloos, the gas having escaped resultly from the hreaches in it, wa were enveloped in a terrible storm of thander, lightning, and pouring rain.

When I returned to West Chester, arrangements were made for another accession from that place, on the 24th of the same month, but nothing of importance was elicited in its adventore.

In the beginning of the fillering Sephenber I mode as assention from the city of Urles, in the State of New York, having received as nictionis from them. It was the first excession ever much from Urles. The "Dully Genetic "of that place spoke of it in the following terms: "All who witnessed this assension, agree to its being once of the now be usually, discretaling, and stalking sights that can be seen. In persults interviencess, however, and the state of the property of the property of the property of the state of the property of the state of the property of the property of the state of t

"The secucion of Mr. Wise was as unassally boundful one. He rose from the garden at an angle, nowing off metal worstand, and at the same time rapidly securiting, as that before he had possed the cityl insist he was greatly above our highest steeples. Having gase-perhaps a couple of units in that direction, continually increasing this distance from the earth, the halton, take by naturch crurred at all, we here are nontinvally, and for a short time second; bound for Treaton Falls, till an astronyl generat took it and pused it, hovering over the Derefald Mills, in review of the city. In the such matching insulates this great fairly which also goes not of the greaten with each a rash, having gradually diminished to a nere apock against the clouds, west down out of sight beyond the hills.

" Mr. Wise says that, immediately on rising, the whole country around was visible to him: the villages, the streams of water, the fields and forests; the whole appearing as if scattered upon a vast plain, and like an immense

garden of indescribable beavy. He was so much cheed by the richness and heavy of the prospect, that he could not fector origing on with exhausts. If therefor for the feeth if it field of video extended about thirty mixture on the could wave. The centre was encrywhere full of the evideones of a furtile and thirty arctited country, the distant rullipses appearing like does us the surrectioning readers, the rock trends for a final like puller fireast, the united as the country of the puller fireast, the water in a thousand places flashing in the smallight. To us his own expression, "If the fairity of heaves is companied to the pulses for expression of the contract of the companied to the pulse presented exhausts on the verified part of the fairity of heaves is companied to the pulse and the contract of the

"The corne of his veyage he describes as being something life the letter 8. When he appeared to a sating daught his older the amount of the Described hills, he was, in fact, three or for multime thouse risk, and the describe we witnessed was made of about that distance beyond the top of the hill where he appeared to lead, this highest point was mode as he was coming from the north, existent downside the rallocal. But the attained highly of dots of the thousand first of words; a said, as he made along the result have the about from the (blank), with a convenient steeple for his to descend apa, he will challenged man of the gas and commerced domessing, but, as he thought probable, he came again into the vectority current of air which he took on first according, and by which he was carried throw or four miles, at the highly of a few banded feet only from the earth. In this way he pused over a large freet, and coming to a wishib field, be there out his lies and drive the histoic towersh the grownt, and finally relating hold of a state in the first, made has freely we instance from the time he left the Carloca, to made from the Lies; the completed counting or when the high pertuiting of the other from the time he left the Carloca, to made from the Lies; the completed counting or form to two him he bet by its corn, be dislaying the gas and specialty in he bellow."

In two weeks, another ascension was made from Utics with about the same success and details,

Our Government being now at war with the Mexican nation, and hostility between the two constries growing stronger every day, it was obtermined by our War Department that the formidable Coulse of San Jaan de Ullon should be reduced. Various projects were under consultation at Washington designed to such an end, apon which I thought it proper to alsolate the following to our government—v.

## Easy Method of Capturing the Castle of Vern Cruz.

The present condition of the war with Mosico will require our forces to reduce Vera Cruz. And it is exhaustedged on all sides to be an externelizarily well betrifted point of defines, almost impregnable to the common mode of warfare, and at best enamed be taken in that way without a great sacrifice of life and annamiation. I will therefore suggest a plan to our War Department, which will render the capture of the Cautho of San Juan del Ulna as familia and easy as the humshing of a frighter.

Although the join I shall propose may seen need to many, stills brief statul of it. I think, will satisfy don more increticates of in efficiency. I be first justice, it will require a believe of common recibil causlin, of about a number of sciences recibilly assisted as a funded for in disaster. This machine, proporly excels with variously, will retain the because of a many days or weeks. It will be couplish when induction, it was now a robby posted. Any 1900 Halleyshout of the course was not been supplied to the country of the constraints of the country in the complication of the country in the complication of the country in the constraints of 1,600 posted, which will have two thousand posted for habitor and name. Then it will be ready to be placed in a position for doubly active, in a very store time. The abolie provides in the country of the country

bear on an object immediately above them. The position of the balloon as to beight, and distance from the retaining point, could be maintained by keeping a proper ove to its ballasting. As it would become lightened by the discharging of shells and torpodoes, an adequate quantity of gas can also he discharged.

If a gun from the castle could be ever made to bear upon the war halloon, it would soon be silenced by the

rapidity, precision, and certainty with which the deadly missiles could be showered down upon them. With this serial wer-ship hanging a mile above the fort, supplied with a thousand percussioned bombahella, the Castla of Vern Crua could be taken without the loss of a single life to our army, and at an expense that would be comparatively nothing to what it will be to take it by the common mode of attack.

Through the medium of your journal I would most respectfully suggest this plan to our Government, and will tender my services for its construction, and when constructed, will, if necessary, most cheerfully undertake its directorship into octual service, at a moment's warning. Yours, respectfully,

Laucaster, Oct. 22nd, 1846.

Jone Weer

The proposition drew out a great many opinions and commentaries upon the plan, one of which we will state, taken from the ' Philadelphia l'ublie Ledger.' "The public have been amused by the many comments npon Mr. Wise's plan of taking San Juan de Ullos by balloons, leding them with men and explosive bombs, raise them over the devoted castle, and let the bombs fall upon it and blow up by concussion. This new method of besieging a fortress has been discussed in every voin of seriousness, wit, or contumely, as the idea seemed feasible, finnny, or absurd to various minds. At a recent party in Frankfort, Ky., the subject became a topic of conversation. After a number of persons had said their say, pro and con, a distinguished wit-an ox-governor of the State-was called upon for his views touching the same. With great dignity he pronounced the plan an admirable one, and the inventor a man of military genius; but, he added, 'I think it will be a very troublesome matter to culist velenteers for that service.""

Soon after this, the following note was addressed to the War Department :-

Ex-Governor Marcy, Se-retary of War of the United States.

Lancaster, Dec. 10th, 1846.

You have no doubt seen, and perhaps somewhat considered over the plan and proposition I suggested through the public prints, for the reduction of the Castle of San Juan do Ullos by balloon. Were it not for the incredulity and prejudice that invariably meet new ideas and projects, I should from the commencement have submitted it to the War Department, for scrutiny. But believing that it would best be tested by "public opinion" in bringing out serious objections to its feasibility, I chose the course of having it first analysed in the popular eracible. Ity this course I should be enabled to discover, what in my first conceptions of the plan might have been overlooked, and thereby save myself the trouble of further urging its merits towards action, as also any formal application for its consideration by the War Department.

So far from any well-founded objections having as yet been neged against its practicableness. I have some of the best minds in the country to sustain the project. And upon a mature and deliberate raviow of the whole anbject, in its minutest details, I write to you with a most unwavering conviction of not only its practicability. but my shility to give it the desired effect. It will be nunecessary for me at present to enter into any detailed account of the necessary requisites to its consummation; but I will state, that the cost of outfit, independent of the war projectiles, would be but a trifling matter, compared with the magnitude of the work it would be carable of accomplishing. As to the objections that may or can be urged against its feasibility, I am ready to robut them with mathemetical and philosphical demonstrations. Should the War Department desire to have further explanations of its character, or to have any objections to its practicability refuted, they will be explained and met by me mean the first intimation of such a request. The novelty, or chimericalness of its character, will, I trust, have but little weight upon the minds of the intellect composing our Government in deterring them from a fair and impartial scrutiny of a subject so pregnant with national welfare.

It has been hinted that it would be difficult to get men that would act in such an enterprise. This belief is as announded as any other I have yet urged egainst it. It would require but nine assistants in the bomb-car, and that number I will guarantee to secure from our own city,

With an earnest selicitude for its early consideration, I remain your fellow citizen,

Jone Wast.



Their commenced at the Distriction States of Olive Sentilemental and oils and the Distriction of the Distric

1847.—Albert Smith gives two graphic accounts of his ascents this year. The first is dated July 5:—

The veteran neronaut, Mr. Green, made one of the best ascents, in his Nassau Balloon, that has been witnessed for some years; taking with him no less than ten companions for a journey through those paths of air with which he only may be presumed to be intimately nequainted.

The verwing was very fire. There was securely say wind; and what these was, hlow, in the general currents, towards the east; but this was hadly perceptible, the levers on the trees being perceledy will. A very number of spectation surrounded the Guedane, and the grounds themselves were convoled by beinly-markers, as much in expectation of witnessing the asserts as to supply the beautiful follows and party, Ser George Wandwell, Copt. The service of the

At some of clock the travelless took their places in high nirth, the or ledge occupied by Mr. Richeno, Mr. Bookholms of the Garrier (dash), Mr. Shiripe (Books, Mr. Boow, M. Menri Fover, and Mr. Green insurfer, which can the loops of the setting, sense force of two best above them, were perched Mr. Albert Smith; Mr. John Laces—genthessa with lawars in the theoriest clockers, Mr. P. Thompson, of Grey's Hospital's Mr. Speans—which when the sense of the sense

"The first sometics apprincised was not that we were rising, but that the helion remained food, which all the world below are rapidly falling over, and the closer with twich they greeted one deporture gave interest, and the observe themselves began to bod like the insures of many signanty. Notice are grouped upon a hillindistance products rather the distinguished company who are uses mattell remoral the model Telesian poles in the Politic Brindey contact all tampose Court. Then they green smaller and a madel, and we thought of the Colossom view; until at lot the one offer of not correct and in its distinctiveness to like to are written.

"There was but one fora, at the same time, dominant in the minds of receptorly. We six possible that the anall specks who merced shape the reducible searches that who were west retroe, a entiled about on carriagos, evidently from the news of the industrions from, were follow-restaures! Way, our last would have hald milliton, and an ensure total have which cancept them like a Negatherism! We server fits in abmillated as wellward to the server of the server of

"No one, who has not seen London from a bulloon, one form the weakers notion of its roat cotton—literaturable substant, stretching on and or, in all direction—to being enclosed fields, and palents—grounds, where none were supposed to crist, by solidanty passengers. And most strange is the near of the otil, or it comes surging into the weblin, as though the whole nathropia deserted you with one voice. You would imagine that nighty crowds below were humaning you on your way; and yet none beyond the ordinary passengers are to be seen. Then nois is an integrible on the number of the orit to be summary recording.

"You are not conscious of any motion, ineither, going with the wind, do you perceive its slightest breath, and the only way by which we could tail we were moving was by throwing his of paper out. The neck of the balloon, however, collapses when it is sinking; and it is always open, to allow the occupe of the gas, which expands on reaching a more rareful atmosphere—between it would be used.

"The new Hences of Parliament passented very interesting objects—the entire pils having the appearance of a deliciate contribución model. The obsensers on the river made, also, a very beantiful effect, leaving two gwings (if we may so call them) of fisan behind them, similar to the trains of a table recket—those fireworks which rice like births, whichout strikes; a sold the rowing boots becoded like caramysy-seeds.

"The ballom did not take a perfectly straight direction, but changed its line according to the currents. Our counse was over Choleso, the Penitentiary, Sr. George's Fields, Sonthwark, Betherhithe, the bits of Dogs, Blackwall, Plaistow, then nearing Woolwich, going northwards slightly to Barking Levels and Dagenbaum Manol, again keeping over the river, and finally descending on Wenington Level, near Rainham, in Essex, opposite Erith having crusted and recrossed the Thanses several times.

"It was curious to see the four reilways—the Blackwall, Greenwich, Brighton, and Eastern Counties—all at

one, with the specks of fusion saving doing them in both directions. As we prosed His-levall, the number of Luckows gravitations and failure, until a loop and almost areful allows regimed. We were the 2009 for kelly. The rich prosail shows the river Lee, with the Limbouws Cit; the both at Greenwish, the genumbs and woods of Charliers, and the vost expanse of the Eners marshes, all thread belong algebra: We had not expressed and woods of the charges, and the contract of the

"The view of the country is not so interesting as that of the metropolis. Those who know the prospect from the top of the ligit, in Switzenhal, have seen a much fine hid-eye partonants that can be got from a billion. It has simply a map-like appearance—very like what the view would be coloured, which was the frontistence to Tend-beam! Billion.

"A neych hring been relected is descord upon, Mr. Green there out the grapul—a tilerably substantial affirm—and we were capted to 'shid light,' I was a world that we fill to per for every interest the britten size pathed properties of the product of the bulleton is pathed properties, by the a short, that would now need surpholy from his note—spirk like that which occurs when rich carriages are brought up to a college to the state parts, his store viction. At their third flower, and then the are two-led the ground, with a bump that successful disconserred the passengers, as the everystant of the loop, at the same time, cane down space hair brade. Bits now heldowers approach from an aligner flow, and helding on, we were soon coulded to get conductably out, and stand once more upon the ground—which belonged to Mr. Herbert of Blainbann.

"The strangest feeling of all, after our improspible journey, was to find ourselves us the Exert marshes, with the abouts of Crements still ringing in our cars. We assisted to pack up the balloon, which goes into the our as a travelling-cost, and then the question arose us to the means of return to Lookon—for the marshes are not places where you can call a cale or wait for a train. We had to wait on to Balesham—a good three nailes—and there at the faur we found so condition and others hereos.

"We could see that the ratio inhalitouts scarcely looked apon no as mortids. They regarded us with open yes and mostle, and appeared distinction to believe in the professed hospitality of beer, which we offered them. But after a time their mispirings vanished, and we Forsel a merry party until the horses were per to—which, at Rindsham, in a process occupying three-quarters of an hour. At length, engaging a cart for the balloon, we started off for London, and arrived addry again at the West-end above one of clock.

"From the delight we all experienced, we consed everyholy to go up in the balloon, and eaply the jumney—which they are sent to those assume has we did. In patter of the squeent frightful flengility of cens and network, tooling me, in radity, to more source. Mr. Green is a steady, col-leaded gratefance: the staries of presence on the cens, transe cold, and the danger of coming down, and il distins, removed by those who man make "absentance" or of everything that belifts these; and the assumine is one of the next construction of experienced, and, at the same time, delication grapeoulle. Indeed, we share water at the prefix to give as tilts excitation to the trip; and here soon marked, if possible, of going up the next time at middight, with ferrords. The continuous to the trip; and here soon marked, if possible, of going up the next time at middight, with ferrords.

Albert Smith's account of his second trip, in Mr. Gypson's balloon, and its perilous descent, is thus given :--

Since the 15th of Oreshee, 1783, when the during Marquis d'Authendes and M. Fillitre de Roder first travels themselve to a first-blinde, other have been for ascente made which tremband in a margiful all nearners at that from Varshall Gardens on Thously night. Setting and to the hapless attempt of the latter amount and his emposition. M. Bennik, whose ballion cample for at an electrical of 2000 feet, and where which better and killed as the rubble varies at Wimmeras, near Badquo, the advantages which cause sourced to the one or all killed as the rubble varies at Wimmeras, near Badquo, the advantages which cause sourced to the one or Andread. Triple or bein indigent that M. Gardense had done a jume or two leften, edge paid to in a timesphere warrafied that the balloom lared. The remains elsevheld the velocity of the decent; but Reinecki was so injured that it stillutately benegit him to be graves.

When I stated, half in joke, a fortnight ago, in the account of a trip in the Nassan Balloon, written for the

• Illustrated Newe, 'that, for further carcinemant, I would next usered at minight, with favorode, without ballant, and the valve clouds, if little heaged how soon three of these coolities would be revisible—the fourth higher curried out in an entirely apposite manner. Anxions to we a view of London by night from a great height, I was remapped with Mr. Gopen for a sent in his ere; and, finding that Mr. Worshell, the propriete of Vantalah, had fettle the evening for Thouley last, I went to the Garbon short eleven cloud. The night was unconsactly cloud and milty, and according better of Vantalah, had sairing; a visal tower sair likely lightering was repeatedly flashing about the sides, privaling the thumberstorm with which, our readers may remember, the emergent is was visited on the versing is a question.

I found that two gentlement, buildes the owner of the halloon, were to be my companions—Hr. CrawVoll and Mr. Pridmore. The Balloon itself was a very fine mention—one as large as the Nasson, but higher, I should enserve, than any of the others used for single sevents. It had lifted sweep people from the ground just before I got there, and appeared in axery way calculated to make a good sevent.

The fireworks—the frame of which recembed a very large shelten drum—were to be lung mean thirty or ferty feet below it, and fired from the car by a funce—a most dangemen method, by the way, as the neck of the balloon is but a fee feet overbead. I hand confise that the preparations give me some measures: there was too much confision—too much noise—too many suggesting and interfering all at ence; allegether different to the transpill and collected manner in which Br. Green had been us mp a week or two forms.

Al bot, however, everything was promoned ready to start. We look in some "sterns" for the trip, as, but it was quite down; it was the intention of the Gyope to have remained up all night; and with six eight beyon of and for billast, gover the command to "left goo". The load physic—1 off also gover" the Year of Vericle was allighted up with the facts: the people humand, and the bolloom new with actives rebelled, benefits, about the supplement of the affects and the contract of the affects and the contract of the foreverbed belleful in triangle the contract of the contr

It is impossible to form the feebbet like of what the appearance of fondos is, seen by night, from the electricate we had now statistic—a nearly as could be judged from the appearant heralt to the interest at heritage, about four thousand feet. In the obscurity all traces of houses or reductants we had night of. I can compare just to coeffine the facility over a fact this and boundless on a gauged with handrafte of themsals of strang or any angular with handrafte of themsals of strang or any angular with handrafte of themsals of strang or angular way and the product of the strange of the strange of the product of the strange of

The fireworks had commoned at Yazahall, and we are the blazer of light about the garben very identically, as well as the epideons of the rocket; and a finds of lighting now and then lighting one and then lighting one and then lighting one and then lighting one and then light and the restriction of the contract of the

We were still going up, higher and higher, until the gentlema neared as we had attained the height of 100 feet—entry a last and a quarter perspectation—when Mr. Cawelt, we had the Lange of the valve like, and was sitting to the hosp of the handing and was sitting to the hosp of the handing and was sitting to the hosp of the natting above us, informed Mr. Gyene that the haldon was gitting very tens, from the extreme restriction of the extremal size the haldon was gitting very tens, for this to "sace bar," by alleving sense of the gas tenepole by the up valves. I many be received to the first the top of a shallon in formisled with what is sterend a "starting valves"—a circular double-flap value that the top of a shallon in formisled with the store that they the starting valves are sixed to the particular that the par

flapped to and fro, like the sails of a ship when tacking between the network and cords by which our car was slung, retreating up away from us more and more into the head of the ballices.

Two of our party directly gree way to exclusations of extress terror, in the milet of which the suggestion was mode to three verying over that might one the hallow. It had two analyses in rule, by which were can away directly, and Mr. Carwoll bewered binsule from the loop into the our, when we all began is the standard of the company of the first of the standard from the company of the first was been about a four first best of the ready of the first of the standard from the low-values of the first of the standard from the low-values of the standard from the standard from the standard from the ready of the standard from the standard fr

"What were your feelings at this manners?" in a spection that I was acted access of times on Webenshy by friends when called to how rabort the activities, and my revisions has my with as hower. After the first start, thus, when the valve gave way, I left collected and transpail, to a degree abmost pretentatural; but every impressed, of the non-trivial hind, appeared to be made with trackful linearity. I have said this appearance of the lights on the earth before my even, these as writtly as when I was looking at them—an though this frame halt locus to furthing impressed on the revision at the youver residual therm. I could see the forewhet kell ligad on at Warshall, and I looked after the river, in a with beye flat we might full into it, when there would still be the chance of a vein for tife. Bet this, on we shall derivative here, must have terminated foothly.

How lang we were in donouting I have not the slightest idea; but two missies must have been the entitle. As one pointed in these ways as excellenge many points, joighay, in a vague names, or deeped, and the rapidity with which we left in flexing helical power of their out-of-the art frightful. The perallelegemen of light, too, formed by the squares, get visibly pares and larger, these imagine in a phastmanageria, and the coelitions of the hallows did not appear to be so vishent, although the near was still swinging. I attribute our preservation above to the first of the spectra of the coelitions of the hallows the first peril in procureing the supervision of the coelitions of the coelitions and the coelitions and the coelitions are well done better the summary with its na machine, and the coelitions are well after by these summarises, the work of the latest it have statement point in the coelitions and the coelitions are well and by their summarise, the work of the latest it have statement the summarise the summarise that the latest it have statement of the coelitions are well and by their summarise, the work of the latest it have statement of the latest it has been about the coelition of the latest it has been about the latest it has been about the latest the latest

We were all directly throws ont of the cut, doing the ground, and mainted the cordage and tills of the ballone, part of which. I table, had cought upon a caseful byte: In this regarded to be entiring to perpeted of the gas. We were no entangled in the action of the property of the condition of

<sup>\*</sup> See ' Educated London News."

balloon; and the cheering that greeted the return of the party thus providentially rescued, was far more hearty than that which had accompanied the ascent.

And now a for words in conclusion to necessate in general, as well as the proprisons of a frees places of ammonant. I hope that no more night necests will be permitted. Nothing is gained by thom. If the great attraction is the view of the forevorts in the sir, they could be sout up by themselves, with a plot balloon, and present an equally brilliant effect—possibly a superior one. Should they still be persisted in, some frightful accident, and succeeding impost, will creating its open to, by entheirty.

The question put to us by Mr. Warbell, just before the accent, which was, "Genheum, do you go up by your few will, and lawry your confidence in the arrangements?" almost inclines one to believe that its diagram—it might have been but slight—was apprehended. I spok perfectly disintensetedly. The accounts hitherto furnished of the night accent have usually been given by the assessants themselves to the reporters; and, therefore, the real this of the vecture has near two remarks forom.

And I would recommend Mr. Gypson to have his balloon thereughly examined by competent persons before he attempts another ascent. He stated, on his return, that the state of the atmosphere affecting the gro, produced much inference inconvenience; but mentiling most have been mechanically wrang in the armagement of the valve, or the more pulling of the line would not have led to a catastrophe so nearly terminating in the loss of four lives.

Since the above was written, Mr. Coxwell has published an excellent ratement of the manner in which the accident occurred. Has synt that the lathorn heart before the valve-line was touched, the valve being found numered upon embenquently examining the hallons; and it is also assertated that he remainden on the hope sutil the concussion. In other respects, his account agrees with the above; the first impression of all the parties being that the valve; inclin fail gase.

Ацият Зипи.

## Mr. Coxwell's account is as follows :-

Yarios remore, in abilities to conflicting written statements, having how circulated as to the cause and result of the precipital obsected 4th. Cyprice hollone on Thoulogy evening, near the Edgewes-coal, Finalise, an explanation of the circumstances of the mishap way probably prove interesting. After triving from the Garkan with an ascending perer archestolated to ensure a clear start, and to it give full effect to the discouries, which were anymoded by mesons of a line from the boop, the bulloon tooks a course of the street to review, in the direction of completely of the processing.

For an hear and a half before we started the lightning was incessant, which elicited from our friends and several of the spectators apprehensions for our safety; and no scener had the fireworks been discharged than a vivid flash occurred, and for the moment it appeared as if the beavens were on fire, and that our destruction was certain. The oppearance of the regions above was ewfully grand. The expansion that succeeded was immense, and we all were convinced that the gas was escaping from the neck. Mr. Gypson immediately took the valve-line, with a view of relieving the upper part of the ballooo. That operation was unfertunately delayed a few accords too long; for notwithstanding that the lower valve was fully open, the silk sustained a fracture, which occasioned as to drop and hang a considerable distance under the balloon. The responsible, and, indeed, critical position I filled, provoked the charge of my having done something that was uncalled for; and in consequence of its being groundless I state thus much. In an instant the ballast was discharged, and the line connecting the lower valve to the hoop immediately cut. The silk then formed, as it were, into a spacious and perfect parachute, and we descended with gyrations indicative of rapidity and also danger. Presently myriads of the gualights which shone so brilliantly but a moment before, appeared to be rising to us, and instactly the car and the ground came into fearful collision. The spot where we descended was close to some unfinished hences and building materials in the Belgrave-road, Pimlico, about a mile from the Gardens. Our course having been semicircular, providentially we all escaped without injury, and the balloon is but elightly damaged. I have no hesitation in steting that had the valve been epened sooner the accident would not have happened.

On the 24th July, Mr. Wise made an ascension from Auburn, in New York State. He

Auburn is a floorishing and bountiful tows, situated about twenty five miles west and a little south of Syrsense, making it a favourable point to reach Syracuse from, by the upper current which always blows from west to east. It was a magnificent voyage, and the main part of the journal is worth a perusal here, to wit :-- Up, np I soured. almost perpendicularly, natil an altitude of at least a mile and a half was reached, when I began to look around me, and then, great God !-- yes, I made the exclamation again as I was sitting with my pencil and log-book in band, riveted to the sight-great God! what a scone of grandeur! Oft have I onjoyed and revelled in the inteltectual indulgences of nature's inxuries. Many, many beautiful and magnificent scenes have I witnessed, but this surpasses all. Such were my involuntary exchanations. I looked around again and again, still the reality seemed like a splendid dream-an enchantment-it was too rich a scene to be deprived of by a short trip. After I had viewed and reviewed the vast panoramic plain, and wondered at and minired the handiwork of the Creator-its amplitude and order, I would try to settle my mind down to a cool and descriptive standard, but admiration and amazement had enchained my thoughts alone for nearly one hour, and ejeculations flowed over the glorious spectacle beneath me. The vastness of the scene, extending nearly a handred miles each way (the atmosphere was very transparent), beautifully interspersed with lakes; the immmerable villages, many of them glittering with silvery domes and spires; the tiny and fastefully decorated prison-house at Auhum; the thousands of variegated grass-plats; the golden tinge of the waving grain-fields; the glossy anriaces of the lakes dazzling in the sunbeams; the lights and shadows over the general surface caused by a partly clouded sky; the large precipices of clouds lying to the cast and partly beneath me; the wide mirror-like surface of Lake Outsrio, with its fringed southern burder; the cities in the evanescent distance decounted with brilliant specks, with a thousand other things, so completely absorbed my mind that when I looked at my watch I found that I had been aloft one bonr and ten minutes.

Looking up at the balloon. I found her dicknipping got at the adity-valve. Although hat half diffed when beak left the guides at Adhum, the immesse mealine was now fall and dischards the testine them the size is that up altitude was ever two miles. A cluster of datashed clouds was harging between us and Syracon, some that my altitude was ever two miles. A cluster of datashed clouds was harging between us and Syracon, some like as in measure see, its northern boundary loss in the distant heavers. After being adds, not beer and whalf is like as inneases see, its northern boundary loss in the distant heavers. After being adds, not beer and whalf I like an innease see, its northern boundary loss in the distant heavers. After being adds, not beer and whalf I like a minesses see, its northern boundary loss in the situate place. Syracon, and making infers of Liverpool, a village five or six miles above the latter place, near which I made a hadding, braiking the Owego todegraph was with the graphing-tone.

The balance of the account is best told by the 'Syncuse Journal.'

#### A SPICK IN THE HORIZON.

"When Mr. Wise had determined upon making an ascension from Anhura on Saturday be assured several of his Syracuse friends that should the weather prove favourable be would andeavour to pay them a flying visit, and possibly take tea with them on Saturday evaning. This was thought a very good joke.

"A few minutes before for viclock Standay afternoon, as a masher of the soverexchoice were on the 'bod excit they thought they expel to anothing for at the out-two that any give be ablume. It was no begree that a main kind, is be sere, but it moved "this a hing of life thought the wat expanse, gailing indiff anybolically ablust the series of the contract of the ablust was at an cell. The follows and its everyer was now fairly in kive. It was a glories as besides was at an cell. The follows and its recognition, a benefitie sightly and thousands in all directions were wrapped up in its submiration. The convex of the hallows was to the north-cost and it passed direction were wrapped up in the submiration. The convex of the ballows was to the north-cost and it passed directly over Colocks, below over through path to be followed in the verified he halp and the series of the ballows which was a submiration of the ballows which is the series of the submiration of the series of the submiration of the series of the submiration of the series of t

"In making his descension, Mr. Wise still kept the balloon inflated, and soon made his appearance in our streets, seated comfortably in his ear, ready for another trip to the "ethor bloo." A farmer's weggon piloted the servousant and his appearants through Shilmsstreet to the Syrames House. How, so may readily be supposed, a

large croot gathered. Mr. Wie was oriderely much pleased with the success of his journey, and the welcome he had received. To graifly curiosity, and at the request of many, ha prepared and made an ascension from the open space in front of the Syracuse Disno about seven sud-ab-laif, and the abouts of the crowd. He travelled a short distance west, landing somewhere in the wichirly of Goldes. At half-past eight o'clock he returned to Syracuse, and reduced the prunite to take to such his first-inde."

My next ascension was made from Buffalo, and the first successful one that had ever been made from that place, as I was informed.

## ARRIAL LOS-BING OF SIXTY-SECOND VOYAGE,

Mensiranda,

Four xx, precisely, started with arrial-ship's Rough and Rouly, 'mode ballast and brisk galiform the S.NY, with moving at the rate of a nilo per minute. Started with considerable according power, but the current was so strong that in order to make a none perpendicular rise thirty porods of bullast were thrown overboard, which having lighteend the research and a strong gale labering against it as it row, caused it to pitch and greate with a desponsta notion, which turned the bulleton bestte concludint created in the network, oad mode the water gurner with a strong the research of the strong the stro

My fast abservation was the place I had left, which was five ministes adterwards. The city, although covering much territory, reserved congruend to his on a rose of a banded miles repairs. Lake Eric appeared mapers of fit is a some magnet, post on its orders a citizensity; then it diverged into two narrow alterny threats, which remitted again around analytrees plat. Use prefection foundated this must be the Green Endan, and immediately any attention was driven to a sortel, for Nagara Palls, as I band a slightly ranking review of workers. My syre concerned upon it; a that the reader's and a few monosatic Fundationity circle out, "I that the Pallst" and no wander, for it locked like a casceda, such as we one in pleasure gardens. I was disappointed; for my mirel had been but not no analyze or Nagara-Nagara gardende, but it was a babble; it belook to mail.

The energy of the great processes are resulting it could only absorbing mind. The little firstly shable had to much the department of a founing date of London bown states, and it was insufficient of itself to excite a time layered that, It boks like a little humber when viewed from the cleak. The sensery amount was not so pleasing as that proceeds around Asterna, and View. Here the country appeared sky when viewed a war from Lade Exis. A rest plain well wooded, with few reads and leavingles; it was shappingered and plain with the country from Lade Exis. A rest plain well wooded, with few reads and leaving it was shappingered as plant of the country from the country of the

might have caused serious consequences to it, at the rate the balloon was moving, had it caught into it. This is distant from Buffale twelve miles.

The Buffalo \*Express 'asys of this experiment:—"The accession was made under disadvantageous circumstance; just up opered and so leading was it no settle in the miled of the people of Buffalo—a large concentre of whom honoured the occasion with their presence on the outside of the Garlen—the fact that this aeronant never falls."

A weak after this another ascension was made from this place.

# ALEIAL LOG-BOOK OF SIXTY-THIRD VOYAGE,

Buffelo City, August 6th, 1847.

Buffelo City, Morris' Garden, July 31st, 1847.

Left Merric Gorden at precisely six minutes part four o'clock with the arrial ship 'Bough and Bealyt'. Wind from the notch kalloon rings alsolyt. There over some hallout—nex, women, and chikhon caranillule out of the very. Ascert became more rapid. Bising, and noving along parallel with Main-trace—a little cast of it. At I raw, the curvat bors for the halp, rheps to feel shifty post to thought of a chaising. One mails on the black, there cut more ballout to reach the great convent of the set of contragation place before pick place. This word (o) I shall get not tere or terms almost both of the set of contragation place but or pick before the set of contragation place but or pick before the next of contragation place but or pick and place the set of contragation of th

The balloun first rebounded and glanced over the water in a ricochet manuer, until sufficient gas was dis-

charged to sink the car some depth in the water. This retarded its progress up the lake, and I found the yearl, see from the first, was glaning on some. In a half-born longer the low twas alonquide, and took me in too. The gas was seen all discharged; and in another half-born I was safely about of the brig 'Enreka,' in company with the gas recons (belian liberal), who took me into port that evening.

The Blatks 'Bully Couler's mode the following societies of the societies—"Newtoniay otherwoon, according to previous assumements, But Wise made is sixty-dark assertance from Morrife Gorden, center of Main and Tapper streets. Great intensit was evident throughout the length and benefits of the day to see it. All nextr., sixty and the second of the sec

According were made from Rachester and Ourrapy,  $N_i N_i$ , the same summer; both of these trips were of about changing, using to the promising of the kless. In the account of the one from Rochester, the following, in white the sounds, cours—Hers is but one point of pentitainy in the circumstance of usy veryes made on Steading the sits of an angular, which is worthly of pentitions noted. I have always reviewed that externise smaller, produced at the surface of the earth, have a remarkably pentition of the eart of the eremant when immediately ever team. Wherefulls are of this thin that raise. For a common mill-flash members as well-still district search for the contrast of the earth of

It notice the same peculiarity, particularly in the returning close of my ours wice, when over Labe Eric. There, the sounded wice from the persons an board the high Zendark wave meantably lake own distinct to my care when innerdistry over them, but still not so much so as was the relocated for your words. This appears were bounded that the original stitutence, and the emissioning quite a distinct. In the control of the words spector from the trig; they became fainter, and very insidistict, after 2 get at an angular position from them. From this in a payers that the exceedant control which may be entry of the man and the proper state the exceedant control which may not use our successful when adjusted any stress the proper state of the proper state of the proper states.

The successful appears were distinct to two variants before the real size, while at a great angular distance they appear with the control of the proper states.

In my voyage from Anhurn there appeared a very striking phenomenon regarding vision. I noticed in the account off it the heldrose of the etemophere. But there appeared also a *kendin* up to object in the distance. Lake *Eric*, which was over a handred miles off, seemed elevated ten or twelve degrees above the horizon, and yet composed part of the visible herical.

Sound and vision are propagated distinctly in perpendicular lines from the earth's sertice;—when load and virtured in angular directions the resulting feet care at diffused in lock care. That I have also noticed in the most wint on executing. The true played by a hand of maxin at Joseph deprepositionally above them was distinct and desiry and when moving off as a rapid horizontal direction. It because way officials in a bard distance. The first played distance, and the moving off as a register distance of the register, and when the propagate distance are considered in the lower side; but when the fring is at an angular distance, though much source than the perpendicular position just members, di it not near our perpetible.

1848.—Mr. Coxwell went to the Continent, and accorded from Brussels, Antwerp, and Eberfeld. At Berlin he showed the use of shells for destructive purposes. At forty feet below the car a wicker lastney was slung; to this he devended by a rope halder, site charged grenoides, or petards, and then reascended to his companions. I much regret that he should not have favoured me with filter dealid of these experiments from the accounts in

A.D. 1848.

the German papers, but his many engagements will not now permit him to do so. Among the marratives he gave me ried new was one of crossing the Skewig-Holstein frontier in this year, when he was shot at by the German seutries, who took him for a Danish spy. On another occasion he went from Berlin in the direction of Dantzie, a distance of 170 miles, in three hours and he minutes.

He ascended also from Vienna, Prague, Breslau, Leipsie, Hamburg, and nearly all the chief towns of Germany, and did not return to England till 1852.

1849.—The passage of the Alps was effected this year by M. Arban, in a balloon excursion from Marseilles to Turin, a distance of 400 miles, in eight hours. M. Arban gives this account of it:—

"I accepted from the Chitese do Fleure on Soushy evening, the 2nd instant, at half-year tis. At eight I was were the word at Shore, where I acceptated I was at the high of 4000 meters. The temperature of the sir was cold, but day; my Contigrade thermometer marked four dugrees below zero. The wind was anoth-west, and sent most way. The November 1 and the state of the

"My provision of bullet was enough to raise as above the bighest peaks. The cold gradually increased, the wist because such gradually can the none highly and the none highly on the the other. He was at the foot of the App; the rowers, each review, all wave spatings; the principal control of the peaks are not all the peaks and the peaks are not all the peaks and the peaks are not to the second of the peaks are not peak to small of the App; and the deven of other, and as the horizon because claurs, and up course regular, Diegna to third of supplex. I was now at an advantion of 4000 meters. It was indispingually accounty for non to pursue my journey and meter believed. Ofton only was under mere and the indispingually account for no to pursue my journey and meter believed. Ofton only was under mere and the peaks are not pursue to the desired of the peaks are not pursue to the desired of the peaks are not pursue to the second of the peaks are not pursue to the peaks are not peaked to be not peak that another shows the many parked the same devertations.

"At Mal'past one in the morning I was ever Mort Viso, which I know, having explored it in my find journey to Folloman. There the Durmes on the 10 to the tiler leaves. I reconsciled their points, and all ownered the magnificent plains of the monatain. Before this certainty a singular optical dictions, excessioned by the shining of the morn spon the snow, made me at fact think spond of over the open was in. But at the westlewest wind had not exact to blew, I was convinced by this fact, as well as by others I had noticed, that I could not be ever the sor. The stars confured the secure of any company, and the appearance of Defort likes satisfies in that I must be approaching Yorks. Ment Illones to my left, on a level with the top of which I was, being far above the closely, resulted as immease blook of crystal, exciting with a chousaff from.

"At a quarter to three Most Vise, which was behind me, proved to me that I war in the neighborhood of Thris. I alternation belight, which I did without neared difficulty, bening habites easily no per much further. I alighted near a large farmyard, where I was surrounded by several watchings, from whose curves at I was pretented by my other. Their haring washested be peasured, who we more surprised that finglinesed at section me. They admitted me to their house; informed me that it was helf-past two, and that I was in their highest of the Fests, near Stellad, it is discussive from Further. I passed the remained of the hight in the farmboom, and in the morning the presents accompanied me to the mayor, who delivered me a certificate, strating my arrival, de: After packing my a public and our; a lot offer Turin, where I revited at time in the morning."

In this voyage the servenest exited from west to cost, from Marseilles to Nice, a distance of about a bundred mile. Crossing the mountains at a point where the Cottian Alps meet need from an angle with the Maritime, be west weept along their eastern side in nearly a northern direction. Had be ascended higher he would no doubt have been carried formula Genoe.

1850.—Mr. Bell attempted an improvement in the form of the balloon, which he

endeavoured to propel by means of screws and fans. Mr. Poitevin attracted 150,000 people in Paris, to look at an exhibition of himself ascending on horseback. Mr. Gale met with his death at Bordeaux during an ascent; for, as was sometimes the case with him, intoxicating liquors robbed him of the full use of his faculties, which are more than ever essential on such extraordinary occasions,

1851,-An accident that befell Mr. and Mrs. Graham, attracted particular attention, from occurring in the metropolis. After grazing the Great Exhibition building, the balloon did some damage to Colonel North's house. The following is Mrs. Graham's account, whilst still suffering from the effects of the ascent :-

Walsorth, June 17, 1851.

Sur, May I beg to forward you as correct an account as possible respecting the ascent of the balloon from the Hippodromo yesterday? It is well known that the wind blew almost a hurricane at times during the day; so much so that, whilst the inflation was proceeding, newards of thirty men, who were holding on, were constently blown to verious parts of the circle by the powar of the wind on the balloon. At such limes it is totally impossible to ascertain the huoyant power at the time of starting by the usual mothod of weighing. When we arose the wind carried as against a high most or pole in the ground, before we had time to cast out bullast, and a long rent was caused in the upper part of the balloon. We cast out sand to clear the trees in Kensington Gardens, and finding ourselves approaching the Crystal Palace, we gradually discharged the ballast with our hands, so that no great weight should fall in any one sast. We succeeded in units clearing it, and then made for a descent in the park, which we effected on the grass, and threw out the long line of our safety-bag (without anything being attached) to some men who were running. Two of them caught this line, end held on for some time, but being drugged along by the force of the wind they let go, and we directly rebounded, the wind carrying us on to a house in Arlington Street, and from thence to one in Park Place, where the car rested between a stack of chimneys and a roof, where we remained until some policemen of the C division and some gentlemen's servants came to our assistance, and aided as with ladders to descend through a trap-door, when two aminent medical gentlemen of the neighbourhood promptly attanded, and rendered us the most kindly aid professionally at such a trying moment. Allow me to add that the grapuel-fron we never let from the ear, as can be proved by those who assisted as on the roof, it never having been untied from the side of the car, as we were too anxious to prevent any accident occurring to the men who were running after us. Naither did wa touch any part of the Crystal Palace. With regard to any accidents that have occurred to myself in my numerous ascents. I have only confidently to declare that I have met with no more than the most experienced aeronaut of the day-all being liable to misebances, particularly on such a boisterous day as yesterday.

M. GRAHAN.

1852.-Mr. Coxwell returned to England, where he met with a hearty welcome. A scientific balloon ascent was made this year by Mr. John Welsh, of the Kew Observatory. Henry Mayhew gives the following account of his experience of an ascent :-

" IN THE CLOUDS;" OR, SOME ACCOUNT OF A BALLOON TRIP WITH MR. GREEN,

I am naturally a coward-constitutionally and habitually timid-I do not hesitete to confess it. The literary temperament and sedentary pursuits are, I believe, seldom associated with physical courage. Fear, or the ideal presence of prespective injury, is necessarily an act of the imagination; and the sense of danger, therefore, closely connected with e sense of the beautiful end the authoric faculties in general. Your bussan bulldogs are mostly deficient in mental refinement, and perhaps if there be no class of characters more fancyless than the rost of the world, they are those who are said to belong to the "fancy." My ereed is that all imaginative men are cowards; and that I am one I have at least moral courage and honesty enough to acknowledge.

Then why go up in a balloon?

You, why? These are times when men's principles of action are enre to be canvassed; so, to prevent the imputation of any false motives, I will make a clean hreast of it, and confess that it was merely "idla enrio-ity," as the world call it, that took me into the sit.

I had seen the great metropolis under almost avery aspect. I had dived into holes and corners hidden from the honest and well-to-do-portion of the Cockney community. I had visited Jacob's Island (the plague-spot) in the height of the cholors, when, to inhale the very air of the place was almost to breathe the breath of death. I had sought out the hannts of beggars and thieves, and passed hours communing with them as to their histories, labits, natures, and impulses. I had seen the world of London below the earlice, as it were, and I had a craving to contemplate it far above it-to behold the immense mass of vice and avaries and enuning, of noble aspirations and humble heroism, blent into one black spot; to take, as it were, on angel's view of that huge city where, perhaps, there is more virtue and more iniquity, more wealth and more want heddled together in one yast heap than in any other part of the earth; to look down upon the strange, incongruous clump of palacos and workhouses; of factory chimneys and church steeples, of banks and prisons, of docks and hospitals, of parks and squares, of courts and alleys-to look down upon these as the birds of the air look down upon them, and see the whole dwindlo into a heap of rubbish on the green sward, a human anthill, as it were; to bear the hubbah of the restless sea of life below, and hear it like the ocean in a shell, whispering to you of the incessant strugglings and chafings of the distant tide-to awing in the air far above all the petty jealousies and heartburnings, and small ambitions and vain parades, and feel for once tranquil as a babe in a cot -that you were hardly of the earth, earthy; and to find, as you drink in the pure thin air shove you, the blood dancing and tingling joyously through your veins, and your whole spirit becoming etherealised as, Jacob like, you mounted the aerial ladder, and beheld the world beneath you fade and fade from your night like a mirage in the desert; to feel yourself really, as you had ideally in your dreams, floating through the endless realms of space, sailing among the stars free as " the lark at heaven's gate;" and to enjoy for a brief half-hour at least a foretaste of that alysian destiny which is the hope of all. To see, to think, and to feel thus was surely werth some little risk, and this it was that led me to peril my bones in the car of a balloon.

It is true that the sorial halls and posics of his had below nearly all porty from the alice, reducing the societies rayth to the one sugar thirties in an attendant above; for truch the dispersed range for excitoment, that species of securid demodrishing which we embounds some hereal stimulate—bad given a most valgar, produced to the second societies of the societies of the print; because one of the position and most displication that there is no age which, whose stripped of the print; because one of the position of the position of the print of the position of the print of the position of the posi

At about a quarter to seem oblick, air of as not the "verena seronest" bock our pieces in the longs desp widestworks blood for a statebod to the Bept Nasson Billous, while we guidiness were assod immediately above our bends, with their back raving against the sutting and their legs interbod serons the loop to which the cooks of the network are fourted, of flow which depend to the cur. There were allogether ainst of usecompless set of human pins for the last its play at shiftly with—and the majority, rayed among the anadese, no whije his weight. Allows as worked the grant gashes, like no measure pelops, and all canned the cur were great grant and the same and the surface of me haddle to the same perfect of me haddle to the sales of the backet, while the lungs from weights were landed out and replaced by large samples being of same.

In the course of about ten minutes all the arrangement for fasting wave complete; the graped, boking like a benille of long-pin rish shocks, which legsther, was hanging core to his der for the cer. The gidde-roy, longer than St. Paul's is high, and show up in a cureous lag, with only the end bacquire out, was dengling beside the graped, and we were raised once fifty for in the air for try the scenericy power of the meables had two lear not through the choick. Then, having been dayl singeped down, the signal was at length given to first the canance, and Mr. Criterin lossening the only post table sould not be discloses, we also that the air-err where the earth exerned to sink subdauly down, as if the spot of ground, with all the spectators on it, and on which we converted to the same springly set the Addylings, and similarly straining had been converted to the same springly set the Addylings, and similarly the spectators of the spot of ground, with all the spectators on it, and on which we converted to the same springly set the Addylings, and similarly the spectators of the spe

Then, as we awept rapidly above the trees, I could see the readway immediately entaide the Gardens, stuck all over with rows of tiny people, looking like so many black pins on a cushion, and the lambust of the voices below was like the sound of a distant school let loom.

And how began that possition parameter offset which is the distinguishing feature of a view from a balloon and which arises from the utter absence of all sense of motion in the machine level. The earth appeared literally to consist of a long series of scenes, which were being continually drawn along under you, as if if were a dorsans beheld flat spon the ground, and gave one almost the notion that the world was an endiese landscape stretched your millers, which some in visible opplies were revelving for your especial engineers.

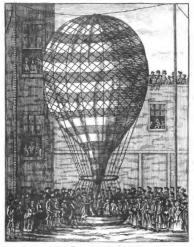
Then, as we struck towards the fields of Surrey, and I looked over the edge of the car in which I was standing, holding on tight to the thick rope descending from the hosp above, and with the rim of the wicker-work reaching up to my breast, the sight was the most acquisite delight I over experienced. The houses below looked like the tiny wooden things out of a child's box of toys, and the streets like ruts. To neer straight down gave you an awful sense of the height to which the balloon had already risen, and yet there was no idea of danger, for the mind was too much occapied with the grandeur and novelty of the scene all around to feel the least alarm. As the balloon kept on ascending, the lines of buildings grew smaller and smaller, till in a few minutes the projections seemed very much like the prominences on the little coloured plaster-models of countries. Then we could see the gas-lights along the different lines of road start into light one after another all over the earth, and presently the ground seemed to be covered with little miniature illumination lamps, such as may be seen resting on the grass at the edge of the gravel walks in suburban gardens of amusement. The river we could see winding far away, undulating, as it streamed along, like a man-of-war's pennant, and glittering here and there in the dusk like grey steel. All round the horizon were thick slate-coloured clouds, edged with the orange-red of the departed sun; and with the tors of these we exemped to be on a level. So deep was the dusk in the distance, that it was difficult to tell where the earth ended and the sky began; and in trying to make out the objects afar off, it seemed to be as if you were looking through so much craps. The roads below were now like narrow light-brown ribbons, and the bridges across the Thames almost like planks; while the tiny black barges, as they floated up the river, appeared no bigger than insects. The large green fields had dwindled down to about the size of kettle-holders, and the hedges were like strips of chesille.

When we were about a null-show the ground sense of in there pieces of paper hint the grey six and these, as we now and left them below, deterted admit the intertieries or the foll. Then usees of the more noisy of the core stretch a negge while I heard a dyspeptic gutthens immediately behind ma, as I was knowling down (for them was bette ness synt, and stretching my best over the side of the car, contemplating the world of women's below, confision for clinic a little nervous; supplie that he was a mon of natural mond contrag, that his object overcomes (i.e., in a less assighed in the off indigently and as a perventive network near the contract of the contract of

On what sharp church-steeple, thought I, should I be spitted? and as I looked down the beauty of the seem once more took all sense of fear from my mind, for the earth now appeared concave with the height, and seemed like a huge black bowl—as if it were the sky of the nether regions. The lights of the villages scattered over the seeme were like clusters of glowrooms, from the midst of which you could here and there distinguish the crimson speek of some miley-sharp.

"There, I've thrown over a latter, directed to my house," and one of the pussengers, "telling 'em we've all safe up here'—and as I stretched over the car I saw the little white flattering thing go zigagging down the air white wa still mounted the sky.

These some of the possession, who had neglicid themselves with an extracellancy stock of courage previous to starting, by most of early belties of previoling chanques; which had the effect of making them non-noisy than agreeable in such a situation, must need begin quarrelling with a row-water Capitain in the boop, as to whether they belongs in the "subscience;" or the "valence;", and at our time that words were limited; as high that could had not have pair to shew quarters the contractions of the course of the cou



appear most indicrous that two rational beings must choose that place of all others for engaging in some paltry equabile as to the vulgar division of the human family into "Nobs" and "Snobs."

Silence, however, was soon restored by Mr. Green reminding the disputants that we were descending at a rapid rate, and it was time they began to look out for their safety. The dyspeckle passenger, whe during the dispute held evidently been suffering from another attack of

The dyspeptic passenger, who during the dispute had evidently been suffering from another attack of newtoness, was at length terrified beyord human endurance by the gentleman who was rather the worse for champages indulging in over warmer language than ho had yet given vent to.

<sup>a</sup> For mercy sake don't swear up here, my good man! <sup>a</sup> shivered out the poor invalid. <sup>a</sup> Wait till you get down bear if you must swear. We are always in the hands of Providence; but, up here, it strikes me that our lives are literally lasering by a thread;

The collapsing of the botten gast of the balloon, to which Mr. Green here down our attention as retizance of the not at which we now decoding, now remote order, and made over you assumine, to strain the thickness of the assument. We could now here the assumed or "A the balloon!" spain rating from the general and faithering in the process of the contract. We could now here the assumed or "A the balloon!" spain rating from the general and faithering in the process of the contract of the balloon was given, and as it despond it was extensive worth in fall, it as easily as the contract of the contract of

"For Heaven's mke! hold fast," shouted Mr. Green, as we were dashed up and down in the cur, all rolling one on the other, with each fresh lurch of the giant mashine stretched on the ground before us, and from which we could hear the case rearing from the valve, like the blast of a former.

"Sit still, all of you, I say!" reared our pilot, as he saw some one endeavouring to leave the car.

Again we were pitched right on ead, and the bettem of the ear shifted into a ditch, the water of which bubbled up through the wicker-work of the car; and I, unlucky wight, who was exated in that part to which the concessions were mostly confined, soon began to feel that I was quietly slitting in a pool of water.

To more, however, was evidently to peril not only once own life, but that of all the other passengers, but still no one came to us; for we had faller in a swamp, which we afterwards found out was Pirbright Common, situate some half-done miles from Gnildford.

Presently, however, to our great delight, some hundred drah-smocked countryment appeared, almost as if by magic, around the edges of the cur; for wase little time they were afraid to touch, but at last they got a firm hold of it, and we were one after mother extrinsted from our swats.

To soll the remainder of the selection would be tame and dult: suffer, is, after some two hours' below, the serial mediane, or, approach, and also we added and peeked up it a next, and thus temperated, as how rather minight, to fulfilled; the ovegone journeying to the same form in a tilled cart, delighted with their trip, and limiting to the many certions selectation of the sevenan securate who had monomially globed them and soon hundred efforts though the six; and who, now that the responsibility of their lives review to longer in his hands, greater than the series of shall we all remember the pleasant night we possed with the old otherwil plat on his 500th account with the Boyd Newsen Balloon.

1853.—In this year Mr. Knight made an account and tried experiments, at Bombay. 1854.—A pamphlet appeared, containing an imaginary conversation between an acronaut and a general, written with much spirit and humour, by Mr. Coxwell, who hoped that balloons might be used in the Crimea. Several of his letters appeared also in the 'Times,'

1857.—On Monday, June 15, Mr. Coxwell made an extraordinary balloon voyage of 250 miles in five hours.

This extraordinary veryes, which is perhaps improvement for speed and distance combined, commenced from the Ivelian Garden, North Woorleis, and terminated about them like beyout Trinsich, is Inventable, not the Order of Certwall. A day occut was assummed from these beautiful gardens, but this strong wind which lower prevented the infaction until a lase boar. Mr. Crevalle, soomer than allow the visitors to be disappointed, volunteered to make a night secont; and a ball-past elevern civick the aeronant took his seat in the car, and invited Mr. J. Allan, of Wilviden Spare, and Mr. Yourne of Popular successionspairs. The ablocat at this moment presented a magnificent spectuals, as it was surrounded by observed first; and it immediately alterests took difficult saids human and a said of greates artiller. The veryegens travered the estimate profits of the nutropoids, and the view of London by night was most washeful and beautiful, and by means of the gardine verye large and main street could be recent. Tray convolution directly ever influences, where the accusance of the control of the convolution of the control of the

About one a.w., the fineness areal captain instituted as careful a survey as possible of the county beaush. The non-which had now risen, asked the search. It must alknow sould of the waters on the sew-slew can capit it to across the sew-slew case the sew-slew can capit it to across the sew-slew can be a self-to accept the search of the county of the search of the county of the search of the county of the search of the

It was some time before the particulars of the journey obtained evolutes. At Sidmonth the alam-bell was using by the night exchange it to find the inhabitation was raint for helloon was not of right, and the analysis and a sufficient of the property of t

## EXPLORATION OF AUSTRALIA BY BALLOONS.

1858.-The following letter appeared in the 'Times' of January 23 :-

San,
A short time since a paragraph appeared in 'The Times,' to the effect that it was "gravely proposed in

Victoria to explore the interfer of that country through the agency of balloons."

A I am the seromatic designer and constructor of the balloons which was ordered in this country by the Honourable George Coppin for use in Australia, it may not be uninteresting to state how far the runour of an arrial vergage is correct, and in what way a survey is contemplated of appearably so hardrons a nature.

Firstly. The balloens which are now at Melbourna were never built for the purpose of extendite experiment or exploration, but simply for public ansarcement. The normants, however, who went cut in accordance with my recommendation, were particularly requested to make frequent meteorological observations, both in the highest region and lower currents, especially with a view of observing how far it is littley a bellom would be indiscusby inhed and return breeze. Mr. C. H. Brewn, a gradhman of acute observation, assisted by Mr. Don, are now making the necessary inpuries, and from the account already reviewly, there appears to be god greeneds for ballering that cretain reliable currents will facilitate the understating. As a matter of course, expensely belli unables, of angle his dismostion, either a fermion makines, of angle his dismostion, either a fermion picture, by a clamerically opposite wind to that emberced at the outset. The party will also be portialed with an imported and giginate fer-ballow, in a collapsed state, which can be influed in the most dissolution facility in the complete of the control of the cont

I am also matering a totally movel apparatus, calculated to regulate the altitude of the exploring balloon, as ato avoid the continual hose figs and power resulting from extreme variations in the atmosphere; and the that that contrivence will bring the serial vehicle nuder a larger amount of mechanical central, and thereby power a step in advance towards rate utilities.

The acceptition will be provided with a photographic apparatus to stamp, with trathful and indelika outline, a series of bird-e-por view, the indispatable correctness of which will be invaluable, with written records of passing across. Viewing calluly the danger likely to accompany such an attempt, I do not think it can fairly be prosoned greater than that which attends an Arctic vorage, or any other which originates from a desire to attain under knowledge by interdigity and personal risk.

This may be the language of estimations, for which the more soler portion of mankind feel no sympathy and often on anonargement. The vogace, however, will not depend upon the public voice to order the liberating iron to be palled, but upon the inspiriting motive-power resulting from careful calculations, in which the colds, coupled with the promised obvastages, are in favour of the trial.

I remain, Sir, your obedient servant,

HENRY CONWELL.

Tottesbans, Jan. 22.

### (From the 'Aerostelic Magazine.')

The following is a brief outline of my plan, which is, no doubt, susceptible of improvement. Operation the first must be the bailding of a large shid, somewhat resembling the covering to the shipe in our dock-yards. where the balloous could be constructed, inflated, and protected from the weather. I would prefer two distinct balloons to one leviathan air-ship, as, to a certain extent, the balloons might be made serviceable, the one to the other, and in the event of an imperfection or rupture in one, the other might be resorted to; and this would be rendered practicable, as the two would be connected by a spar, although distinct in their position and floatage. The size of these belloons I estimate at 100 feet in diameter, which would give, calculating for the globular form, a surface of 31,416 square feet each balloon, and a capacity of 523,509 cubic feet. Thus do those few figures clearly show the advantage of ample dimensions, as the yards of siik required are infinitely less in proportion to the capacity, than is the case with ordinary-sized balloons, because the surfaces of spheres are as the squares of the diameter, whilst the contents are as the coles. Over two-thirds of the exploring balloons, ontside and free from the netting, I would employ a hood or overcoat of silk, so as to keep off rain or humidity from the gas-bag itself, the effects of moisture producing disagreeable consequences, both to the voyagers and to the balloon. As the power of tolerably good-hurning gas of the specified quantity would raise more than 40,000 pounds weight, the machines could take every available requisite, with four persons in each car, and two herses in separate cars alung underneath. If pure hydrogen were used, the power would be greatly increased; but, all things considered, I should prefer coal-gas generated expressly, at a specific gravity of about 350.

It would be well to have the cars waterproof, something after the fashion of a scaport-car I invented some years since, which was so constructed to set as a lifeboat in case of being driven out to see.

Supposing the balloons to be fully equipped, and the visiol in the desired point, two courses would be open to commanding aeronant; either a bold, reclaim dush for the interior, leaving it to chance, or a return because, to get back; or either a mode of procedure based upon reasonable inferences, by which the corne of the balloon could be traced, and by which the aerial party could steer their way back. This letter is the plan I should attick, "discretion being the better part of valour,"

After inflating the balloons, it would be advisable to connect them by means of a wooden or iron rod, say 150 feet across, made in pieces like a fishing-rod. Ropes on either side would form an additional accurity, and a special foot-rope would prove instrumental for a personal transfer, if needed, in the manner sounce travel the yards on board a man-of-war.

Secondly: Trail-royes, to restrict the attitude to about 100 feet, not being algoritomable in an unimbalated country, usual proor tunneared periorismle. Indeed, without new nomes or cashing the ballons to initially attitude, after lay machinery to came a seconsists of waters and descents, or by trail-royes, the borismant corne of the hallons would be limited, poolshy; to coverage four laws of making; the virtains, both is temperature and in naturalpeir pressures on the surface of the hallons, would reduce the surface of the hallons, which is the surface that the works, by connecting the naturally with the next's surface, but so of power and internet or dwight at slight, or during rais, would be constrictlustered by an interned deposit of rayes to during, and subsequent expansion by bacts would revote the balance, beging it to discussable source of ballons to test; the different to test; the different balance having it to discussable source of balance to test; the different to test; the different test and the substant test that different test.

Thirdly. The most important provision of all remains to be considered, via, how to leave behind, from the very place of starting, sure indication of the course pursued, so that the serial party implies steer homeword by, in case they could keep affect not longer, or a searching party might be directed by, if called upon to look for the sercenative accentificate.

It appears to ma that the simplest and most affectual way to accomplish this would be as follows:—

To be provided with an alembota stock of paper messengers containing the printed words, "The Billiams," A stated instructed clius, any servy half-minute, it would be the duty of the Wideh to ext out be billy, which would so on reach the ground, and would serve as a clue to the course taken. Then, again, at spaces bills, which would so on reach the ground, and would serve as a clue to the course taken. Then, again, at spaces of about two or twenty wides, a flag and and might be in drown with a waterproft top of corn and provided sure the pointed extremity, which would cause it to full straight and enter the soil; the flag would prove a landmark, and the provisions might seconomized earlier homes or wety-term out or bons.

By taking ballast of corn and hey, besides sand, and discharging it in bugs, the balloon would be relieved when requisite, and numerous places of refreshment established, with signposts to denote them.

As the centry is described to us as "thickly wooded, and sloanding with good natural pasturage," he aeromate could past their landaristic on high open ground, and as a india-rubber covering would shield the provisions from min, so would it, perhaps, from the interference of animals in search of food. A wire eage would be a mental shifting.

In the pioneer trip it would be advisable not to penetrate too far, but rather to return with good tidings, and photographic views.

As we are led to suspect the existence of pialss and open localities, the ballocas could be brought apend moored if bearinble, until the wind chopped round, as indicated by the compass, for the home-ward veyage.

The immune capacity of ballocas one handred feet in disserter, just constructed of thick sew stift, would

unable the acronants to anchor them in shorly ropic without experiencing any considerable loss of power. I am at the present time giving attention to a contrivance to super-eds, in some measure, the use of the trail-ropes, or, at any rate, to prevant any unpleasant results in cost of these ropes breaking. The possibility of sublestly parting with a great weight, calls for contenseing machinery, and I trust I have hit upon a plan by which the upward flight of the holloous would be checked.

If the worst happened, the horses must be mounted and baited occasionelly at the sign of the flagstaff. The bills would point out the route.

Here, then, is a short sketch, in which the probable dangers and emergencies are considered and provided against.

BALLOONING IN AUSTRALIA.

This year will ever be numerable in Melleurne and Sythuy for the first introduction of ballocaing by Mesers. Brown and Dean, the Auronants from Loodson. The Honourable Groege Copping noomived the idea of attracting public attention to thus at Cremorne Gardens, and a goodly number of ascents, both by day and by night, have taken place with great clear. The Schlowing accounts from Australian perper will be read with

"Wn have to acknowledge our obligations to the aeronauts for the following narrative of last night's royage

in the air—Our accent protected, evening from Ureneron Gordens with the "Autonilia" Balloon, we the most plending we even used, and terminated in a names zeroer below excomplibed by any creamat. We seemed at few ninetes past tex, with a considerable appearing of freewards assperaded from the car, which the calm rate of the evening realistic in to display even the bands of our princes in Greenows. We becomed ever the preside for a considerable length of time, and then moved of forwards the Datasird Gordens, over which we seem at twenty-their ministers past tex. After following for some time the monordering of the true Trans, we not with a decided correct which corrido or over Birkman's Planding, but at a very sleen rate. Twice we descended, and we have a supplied to the control of the control of the correct planting of the control of the correct way again number of them, so were still the ballows much be injuried, and readed the continuous or more, was at to descend on the appoint which of the Varrow, somewhere near Battan's Youngs. Our greatest difficults we about a mall one all and M. Afth the hight fact which we were oldiged to be quicked our greatest and the control our control.

The deposition of moisture on the halloon and scriting was so goet as to oblige me abused continually to throw our ballant. The housing of the firmwork spinal, and a Creamen are abstinctly beard by us, and the fireworks presented one of the prandet sights imaginable. The most abuse as bright that we could see our compose and work, and very mad a set model, a first posing over the second see our compose and work, and very mad a secondary. After posing over the country pressor is the crewl belaved rather reliefs, bracking come of the apparatus and abuling the or widership, we store our latest and their prival condensavened to reside tabloon, which reasonable to an electrical of 1500 feet. In rescending, a correct hrought us back over the railway, and we faulty came down at the substrate part between the transfer lander [11] and the prival condensated to the first substrate the properties of the substrate part of

### The Balloon Ascent in the Pomain.

The large and sphendid lalloon which, under the name of "the Australasian," has already made suncerous seconds ascerts in Moldenous, rose, with Moson. Flow and Davin. it is car, from the Cribed Ground in the Other Donain, yesterlay afternous, at the velock. A very large concerns of people-manning to spread to grow the proposed of the finge-were present on the excess, and halled the earlier of the undertaking with Austral of Jacouse and approbation. The worker had been during the day of a momental ampophical heaster, and the wind (which like per part) sauntly from the authorized was one with the control of the enterprise. In spire, lowever, of every simister prediction, the fortableous nearest many the proposed proposed and the control of the cont

The tolkes and difficult process of indicion took place is an eyen space early exposite the Government Gollec, so the first the gast of the lates of busines. It was shiftly amongle with go belief in the one order hands of the Antendam Gollech Company, and commenced at about two clocks, in the processor of annexes between 20,000 and (2000 feet of gas, the "Antendamic Pariginal go conflicts exceeding conflicts and the effects of the wind, was exercisely second by a numerous and coage number of volunteers to the array represent for the display of in process. To evoid the difficulties inappealing from the rough below wis brought by a dast out seems the wastern source of the Government Publick, about one handred yards below for fitthan docks. About an ballower adversaries as shows of the grant of the copy of the logical Antillery, assessment the arrival of his Excellency the Government and units, who were conducted to a handress tent, document with Roya and standing within the equivous excellence of the grant document of the wind, and, although that down and beyt sawly as for an particle, the source actived on seconds of the wind, and, although that down and beyt sawly as for an particle, the source of the source actived on seconds of the wind, and, although that down and beyt sawly as for any particle, the source doctored in the figure and survival or the saw of the company of the sawly as for any particle, the source doctored in the deprise of the source dependent and source active of the sawly and the saw of the sawly as the saw particle and the sawly as the sawly as and the saw particle and the sawly as the saw

high scientific attainments, that the inflation was quite sufficient. After a short delay, ovarything was promptly cast off, and the balloon at once rose steadily and majestically from the spo' amidst loud and general cheering. Although the wind was rather strong, not the slightest oscillation was perceptible. The semmants responded to the greetings of the crowd by waving their caps, throwing out bills, &c., becoming rapidly less and less distinctly visible as the balloon took a northerly direction. Having reached a considerable altitude, the balloon crossed the harbour; and, after the lapse of a few minutes, was observed to be slowly descending ovar the gullay, Nentral Bay, a short distance from Mr. Severn's residence,- Sudsey Morning Herald, Dec. 14, 1858.

1859.—The Crystal Palace Company engaged Mr. Coxwell's services for ascents from their cardens.

1861,-Depuis Delcourt thus wrote to Dr. Pierre Moreaud, to encourage him in the successful experiments he was making with regard to the application of steam to captive balloons :-

Paris, March 2nd, 1861.

I thank you for writing, and I urge you to carry out your project of publishing a resent, or rather an exposition of your system.

Whilst waiting for the successful issue of aeronautics, when the fields of air will be traversed with freedom, you may demonstrate what can be actually done with aerostation even in its present state.

Your method of directing captive acrostats appears to be without a flaw; that is something! Their construction will assist general locomotion.

See

By experiments made on a larger scale than those 'already attempted you will force the suggest not yet convioced to come and discuss the subject with you. Lat the public also have knowledge of it: capitalists will appreciate the resources of your system; and when the day shall have arrived for the final experiment they will not fail to supply you with the funds.

The idea expressed sixty years ago by Thilorier will at length be put in practice. His reasoning was just; but at that time they had neither steam, electric telegraph, nor many of the other resources of which you intend to make so judicious a use. The means of application and the realisation incontestably belong to you,

As to me, Sir, who for many years have sacrificed much to the art of acrostation, I shall be happy if my personal assistance can be of use in the work you have so courageously undertaken,

The best commencement, as I have already told you, will be to make the first regular transport by the aerial line from Paris to St. Cloud. Napoleon III, likes great undertakings, and protects them as an enlightened man and powerful monarch, as soon as they are brought to his knowledge.

Your idea, in thus rendaring homage to him, would be placed to a certain extent under his patronage. Publish your book, Sir, and by this means aid the spread and davelopment of the acceptatic question.

Accent at all times my devoted services.

Your obedient servant. DERCH DELCORRE

1862 .- At the meeting of the British Association, a Committee was formed for the purpose of determining the temperature and hygrometric condition of the air at different elevations above the earth's surface. It consisted of-

Lord Wrottesley. Colonel Sykes. Dr. Robinson. Mr. Gassiot. Professor Airy Sir J. Herschel. Sir D. Brewster. Dr. Lloyd. Mr. Glaisher. Admiral Fitzrov. Dr. Lee. Dr. Tyndall, Mr. Fairbairn. Dr. W. A. Miller.

They secured the services of Mr. Coxwell; but, not having sufficient funds for the construction of a balloon of a suitable size, this aeronaut, with true professional zeal and liberality, declared his readiness to construct the required machine entirely from his own resources. It was completed by June and then commone of the scientific neemts of Messar. Glaisher and Coxwell, which have become so memorable. The following is Mr. Glaisher's account, published by the request of the Committee, for the eight accents in 1802, extracted from the 'Report of the British Association.' There is addition amost of figures, of which I give only those for the highest accent, on September 5, from Wolverhampton, when these enterrising accounts attained the uncreeclented elevation of zero miles.

## § 1. OBJECTS OF THE EXPERIMENTS.

The primary objects were—
The determination of the temperature of the air, and its hygrometrical states, at different alevations, as high as resulting.

The secondary objects were-

To determine the temperature of the deve point by Duhali'd deve point kyprometer, by Degman's condensing, hypometer, and by you of we bells theremoneter no ordinarily one), as well as when made the influence of the applicate; so that considerable volumes of air were made to pue over both their both, at different demains, as, shiple as possible, the practicality up to those belight where man any be resident, or where toops may be located, as as in the high and so all phase in India, with the view or accretizing what conditnees may be placed in the nor of the day, and we both theremoneters or those elevations, by exemptions with the results of and from them, and with those frend directly by Duhali's and Regardit's hygometers, and to compare the results as found from the wey hygometric benefits.

To compare the readings of an eneroid barometer with those of a mercurial barometer up to 5 miles.

To determine the electrical state of the air.

To dotarmine the exygenic condition of the atmosphere by means of ozone papers.

To determine the time of vibration of a magnet on the earth, and at different distances from it.

Te collect sir at different elevations.

To note the height and kind of clouds, their density and thickness.

To determine the rate and direction of different currents in the atmosphere, if possible,

To make observations on sound.

Te note atmospherical phenomena in general, and to make general observations.

# Instruments and Apparatus,

The instruments used were nercurial and amerid homosters: days and web-bill themessaters; Dusiell's deve-poiet hyproseter; Regnanti's condensing hyproseter; maximum and minimum themesseters; a magnet for horizontal vibration; kernaticully scaled giasa tubes fress which air had been exhausted; comes papers; and an electrometer best by Prof. W. Thousson of Giagons. Remonstruct. The necessarial homoster consolved in all the accents was a Gay-Lussac's nithon harmeter by

Mr. P. Akila, and is one of these used by Mr. Webh in the year 18-21 his exercitions. A usy-Lonson suppose around retroscere you for P. Akila, and is one of those used by Mr. Webh in the year 18-22 his keep-referents. The interdancet of its tube is 0.25 inch. The graduations were made on a brass scale, from its middle point upwards and downwards; each division was about 0.05 inch. In length, representing twice that value, on that an elsecretation of either the lower or upper surface of the sortrary would give the approximate length of the column of increase.

The readings of the upper end were alone taken, and the corrections applicable to this end have been applied to all observations.

The barometer was fermished with its own thermometer, whose bulb was immersed in a tube of mercury of the same diameter as that of the barometer.

This instrument sometimes read more than 20° in excess of that of the sensitive air-thermometer.

The accredid harometers were made by Messrs. Negretti and Zambra; can was graduated to 13 inches, and the other to 6 inches—tha later instrucence having been used in the accusa on August 18 and Spetimber 5, and the former on July 17. In consequence of a difference of reading between the attented and memerical harometers on 2 H 2 July 17 (and as both instruments were broken, it was impossible to say which was in arror), and as the correctness of the siphon baronecter at low readings is dependent upon the evenness of the tube, another baroneter was used in addition on September 5, rands by and at the suggestion of Mesers. Negretti and Zambra, as follows:—

A take feet in length was filled with soverey and belief throughout in whole length; a glass cinters was blown on the bettom of the take, and how they works in the form of a sipher; a stopool, we spleed between the take and cinters, and which the merery filled the entire take, as mork was made on the cisters, at the leval of the menery in it, for raw; the stopools was then generally speed, and the memory allowed to obsected near owns inches. The rise which consequently took piles in the cirters was carefully marked on the same side as "O" in the circumstance of the circumstance o

In finally tasking the harometer, the upper portion only of the thie was used; the cisters which had been at the off the lower portion was removed and jointed on the upper; and in grobating the scale of the horser, the rise which took place in the cisters at every inch was deducted, and the scale reduced in its satisfic length, by the exact amount of the rise of the mercury in the cisters. This instrument was therefore probably as accurate at low residings and high.

By<sub>2</sub> and Wet-Rish Theometers.—Two pairs of try- and wet-bulb thermometers were employed, one pair as colimarily used, their bulbs being protected from the direct rays of the sun by a double highly-polished either challe, in the form of a frastrum of a cone, open at top and bottom. A obstern was fixed near to three, from which water was converged to the wet-bulb thermometer.

The laths of the second prin of days and we boild thermounters were enclosed in two offers trabe pixed side by side, and contracted together by a count the policing their upper rode, and our to his were placed official shades as in the other pair of thermounters. In the left-hand task was placed the dep-boilt, and in the right-hand twin that we are bounded to a popular by his case. The dependent of the dependen

Repairl's Contening Hypernetr.—This instrument was nobe with two thermometers, as described by Regnant in the 'Anneaire McGeologique da la Franco' for 1849, page 221, excepting that it was furnished with silver-gilt cups. The scale was of irory, and the two thermometers were fixed in their cups by means of cork, for ready packing up. The instrument was node by Meurs. Negretti and Zambra.

Daniel's Hyprometer was of the usual construction, by Messrs. Negretti and Zambra.

Exhausted Tules for collecting stir.—These tubes were partly constructed by Messra, Negretti and Zambra, and partly by Mr. Casella.

The thermometers complayed in the observations were exceedingly smallive; the bolls were long and cylindrical, being bout the of an inch in length, and to sub his disasters. The graduations, exciteded nomines of the word all on viruy eachs. These thermometers, on being removed from a room located 20° above that of an algioing apartment, appeared the temperature within hist alwayer in about to 0 × 12 weeds; it is possing from a heared apartment to one of a lower temperature, it beds more then doubt the time is approximate to which hist algoes of the latter. They were as smalling that exceeping our procession is required to a spepilod to then on account of abagichtows, and this was found to be time to give very our agreement in the respectations at the latter of the contraction of the latter of the contraction of the

### § 2. Observing Arrangements.

One and of the new was compiled by Mr. Cowardly, new the other, in front of a good, was placed a board or this, the carrentiale of which readed on the side of the ear; a good his board were picked wishlas framework to carry the exceed thermosters, hygomenters, magnet, acrossed borouster, do:; a perforation through it substited the lower branch of the assecrated borousters to above above, being the upper frames it is convenient between for clustering. A watch was set to directed him, and placed directly appeals to myself. The central squeet of convenients when the parties of the convenients of th takes, one of which passed to Regonali's hygrometer, and the other to the place of the dry- and wet-balb thormometers proviously referred to, both the takes being furnished with stopcocks.

#### Circumstauces of the Ascests, and General Observations.

The accents were all made by Mr. Corwell's large balloon,—three from Welverhampton, four from the Crystal Palace, Sydenham, and one from Mill Hill, near Hendon, where the balloon had fallen the evening provious, and had been anchoved during the night.

Accord from H-Indonespen, July 15.—The balloon was instead at the Stifferd Book Garwacks, Webreshame, with carbinative days most carefully repeated by the Egispier, Mr. Trissons Proving, and frequently they as long time for our use, the Directions of the Gate Company having most liberally, to their great inconvenience, placed generater at our disposal for as long at times are wested off. The Directions of the Company and to Mr. Perl our best thunks are due; for and all consistent they always the threat transity to contribute to the success of the experiments, in which Mr. Joseph Wolter, Mr. Joseph Cologer, and Mr. Pureboli dog Spreat interest.

The washer previously had been had for a long time, and the ancest had been delayed uses day in consequences: the vide was thill howing strongly from the vert. and considerable difficulty are experienced in the preliminary arrangement, and no instrument was placed in its position before starting. The scoret to by Base at b 4 th at n. a. a; a store had below was quiesment. A height of 2007 for twa marched below no observation and the starting and a being the starting the starting to the starting order. The sky was the no storied to be of a deep whose colors, without a world of special tops in the starting of the starting of

At starting, the temperature of the sir war 30°, and developint 50°, at 4000 feet it was 50°, dee-spoint 31°, and doesended to 20° at 14000 feet, the war 50°, dee-spoint 31°, and doesended to 20° at 14000 feet, the way 10°, and the field that of 15000 feet. During the time of possing through this quere, both Mr. Curwell and syroif per an additional destiting, feeting occurs in the we head despression a temperature before zone is district, we would be similar below to be similar to the beight of 15.000 feet, the temperature, as shown by 40° the season's intermental, was 31°, the despression of the similar temperature of the similar tem

When the balloon had attained a height of 4 miles I wished to descend for one wt we miles, and then to reascend; but Mr. Coxwell, who had been watching its progress with reference to the clouds below, felt certain that we were too near the Wast; predence, therefore, caused no to absorbed the attompt.

Our decent began a little darf 11.xx, Mr. Caverell experiencing considerable mensions at our two closevisitivity to the West, we man deven quidally passing from a keptle of 15.000 feet to one of 2.400 feet between 11.3. 20 m. and 11.3. 20 m. dispring tits to show selected at the electrics, which proved us less also been known for the telescent with the passing through the feet between the believes two introductions, which proved us less also were the withsteading all list certains, as we callected weight by the confinement of their immores second or report through which we were precing the docestor as encessarily very rapid, and we seen to the earth with a very confinement of the confin

The descent took place at Langlam, near Oakhum in Butlandshire, in a meadow near the residence of Mr. E. G. Baker, from whom we received the atmost attention.

Arms from the Optot Pairs, July 20.—A table was fixed to the side of the car, partly within and purily without. The instruments were placed on a framework, fixed to the part of the table entities, so as to be beyond the influence of the occupants of the one: are note-book, watch, and assorid harmenter rested on the inner part of the hable. The sir was in greate notion from the south west, enabling the instruments to be nucle ready for observation before starting; and at 4th 4m row, who hallows that the earth. The temperature declined instantly. Observations were taken every minute or half-minute from the time of ascent to an near as possible the time of descent.

The readings of one baromoter were kindly made by Mr. W. F. Ingelow; and he also assisted ma in observing the first appearance of dew on the hygrometer,

A beight of 7000 feet was reached at about 6 o'clock; and the descent began about a quarter past 6; it was ranged to the rapid, but quite under control, and we reached the earth at the village of Singlewell, near Gravescud, at 6h, 30 m.

Acoustic form Wheelmorphis, Appel N.—The weather on this day was formular there was but tilthe wind, and that kineting from the N. F. By some ablain own anough inflated; and as it merely sweep in a light wind, all the instruments were fixed before starting; and at 1 k. 2m. 2m. s. n. N. Hr. Cowell pulled the propagation  $F_{\rm cov}$  is a mounted the ballows and their new stealing, bands a preparabilisative, this asserts was all the same and the row stealing, bands appropriate pixel, the assert the same and t

A decoust was grabully made to 1200 feet by t h. 2 m.; the large were being lighted over London, the hand of London graphy inversing in closely A. At this time shorting was heard of people below who as well hallow: a height of between 1500 and 2700 feet was minimized iill T b. 40 m., the temperature waying from 3Tto 3t; and the spin that out  $t^T$ . The river people of all, in the theight of the panels, it is a well as not receive in lighted up, and the shirles of lights, constince in straight thus, searchine withing like a see when t is an analysis of the shirles of lights, constince in straight thus, searchine withing like laws, searchine as the present of the straight laws, searchine t is a with a dress words. To arbite rows of the tension of the surrogards have, associated as the presentage wowth the dress words or Taube row of the tension of the surrogards.

For a considerable time Kennington Oval and Millbank Penitentiary were in sight, and it seemed as though we could not get away from them. At 7 h. 30 m. Mr. Coxwell determined to ascend above the clouds. We were then about 2500 feet high, and the temperature was 53°, dew-point 46°. At 7b, 42 m, a height of 3500 feet was attained, the temperature being 51°. At 7 h. 47 m. s height of one mile had been reached, and the temperature was 45°, dew-point 42°. It was very dark below, but there was a clear sky shove, and a beautiful gleam of light appeared. We still ascended till the clouds were below us, tinged and coloured with a rich red; the temperature had now fallen to 43°; we were soon caveloped in a fog again. At 7 h, 52 m, the striking of a clock and the tolling of a bell were heard. It was quite dark below; but the sun tinged the tops of the clouds. At 8 h. 5 m. wa were quite above the clouds, and it became light again; the hum of London gradually died away. By this time the temperature had increased to 55°, the barometer reading 23 inches, corresponding to a height of 7400 feet. After this we descended, and it became too dark to read the instruments. London again was seen, very different, indeed, in its appearance from when we could pick out every square, street, bridge, &c. by its lights; now, as seen through the mist, it had the appearance of a large conflagration of enormous extent; and the sky was lit up for miles around. After a time the lewing of cattle was heard, and we seemed to have left Loudon, so Mr. Cexwell determined to pass through the clouds and examine the country beneath. We passed from the comparative light above to the darkness beneath, rapidly becoming darker, and found ourselves some little distance from London. and shortly afterwards touched the ground, so gently that we were sourcely aware of the centact, in the centre of a field at Mill Hill, about one mile and a half from Husdon, and it was resolved to sucher the balloon for the night, with the view of making an early morning ascert.

Accord from Mill Hill, over Herden, dayset 21.—By half-past 4 a.v. the instruments were replaced, and the scart was again the fi, If was a dult), warm, cloudly minering, still rather docks, the sky coveract with circumstate cloud. The temperature was nearly as high as 01°, and deep-point 50°. There were in the car, besides Mr. Cexwell and myself, (Spaish Perival, of the Comangule Hangers, Mr. Ingolow, and my son.)

We stifled rose very alonly 2, at 4 h. 3m, so were 1000 feet high, and the temperature was 3%, deep-point 5%. At 4 h. 1m there was a braid in the obselect the east, and a beautiful lime of light with gold and elever time. Here sud there the norming nite was excepting. At 4 h. 5 in, the temperature was 50°, and deep-point 42°; and was below as, and the closel of ally at the in a transition alone into inconsults, or the closel of ally at the same level as we were, viz. short 3000 feet; black closels were above, and insite was excepting along the ground. At 4 h. 5 in, we were in obsel, surrounded by white which were above, and make two crepting along the ground. At 4 h. 5 in, we were in obsel, surrounded by white which, the temperature was 50°, deep-point 50° we were place starting closely at 40° h. 50° h.

As we ascended, the tops of the mountain-like clouds became silvery and goldon. At 5 h. 1 m. we were level with them, and the sun appeared, flooding with golden light all the space we could see for many degrees, both right and left, tinting with crange and silver all the remaining space around us. It was a glorious night! At 5 h. 10 m. a height of 8000 feet had been attained, and the temperature had increased from 384° in the cloud to 41°. We still ascended, rather more quickly, as the sun's rays fell upon the balloon, each instant opening to us ravines of wonderful extent, and presenting to our view a mighty sea of clouds. Here arose shining masses of cloud in mountain-chains, some rising perpendicularly from the plain, dark on one aide, and silvery and bright on the other, with summits of dazzling whiteness; some were of a pyramidal form, and a large portion undulatory or wavy, in some places anbidding into hollows, and in one place having the appearance of a buge lake; on the extremity of the borizon snowy peaks bounded the viow, resembling Alpine ranges. Nor was the evene wanting in light and shada: each large mass of cloud cast a shadow, and this circumstance, added to the very many tints, formed a boantiful scene. At 5 h. 16 m, we were searly two miles high, the temperature was 32°, and dew-point 13°; the air was therefore dry. At 5 h, 18 m, we were above two miles in height; the temperature was 31°, and dow-point 10°. By 5 h, 31 m, we were something less than three miles high; the temperature was 21°, and dow-point -15°, and it decreased to -19° by 5 h, 34 m. This clavation was maintained for half an boor, during which time the tempe rature increased 5° or 6° as the sun's altitude increased. Shortly after 6 o'clock it was determined to descend; the temperature, which had been as high as 27° had fallen to 23°. At 6 h, 13 m., at the height of 21 miles, we heard a train. At 6 h. 20 m. we were two miles high, and the temperature had increased to 39", and dew-point to 19": at this time I noticed the loud ticking of a watch. Captain Percival said he could not hear it; he was seated and I was standing; and some experiments were made, when it was found that when the nar was at the same level as the watch no sound was heard, but it was remarkably distinct on the ear being situated above it,

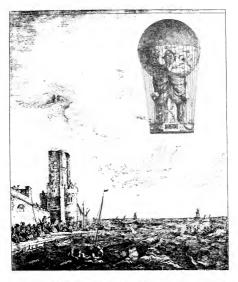
At the height of two mixes the harking of a day was hearl; the temperature at this time (th. 2 m.) was a 2°, and descept in (10 m.). The shade of the lallow, with an entireling and of primatine closurs, was hen was remarked; and it interessed in the contrast, which had been in perspect saring the descept, was insendingly developed, and on the region from the closel at 6 h. 32 m. the interestent was 65°, due point 38°. The ordy was now in sight, without a ray of consulty falling upon in 2 m to the region of the contrast of the contrast, where the contrast of the contrast, we have the contrast of the contrast, where the contrast of the contrast, we have the contrast of the contrast of the contrast, where the contrast of the contrast, we have the contrast of the contrast, where the contrast of the contrast of the contrast, where the contrast of the contrast of the contrast of the contrast, where the contrast of the contrast, we have the contrast of the contrast, where the contrast of the contrast of the contrast, where the contrast of the co

Area from the Crystal Palace, Systember 1.—The wind on this day hlow from the E.N.E., the sky was almost covered with circurstrates deed, but the horizon was moderately clear. The ascent took place at 4 is 40 m, 8 m; that temperature was 64°; the bellow rose to the height of half a mile in 4 minutes, the temperature decreasing to  $10^{11}$ , and developing to  $10^{11}$ , and developing to  $10^{11}$ , and developing to  $10^{11}$ . An of the other of  $10^{11}$  and the interest to  $10^{11}$ . At this time the whole of the fiver Thanace, from its nouth to be versal Richards when the  $10^{11}$  and  $10^{11}$ 

in sight. At 5 h, 31 m., when we were about 4000 feet high, cleuds were observed forming and following the whole course of the Thames, from the Nore up to the higher parts, and extending but little beyond its sides: the clouds were parallel to the river, following all its windings and bendings. The Astronomer Royal has often seen this phenomenon ever the part of the river commanded by the Royal Observatory; but it was searcely expected that clouds throughout its whole course would have formed so simultaneously and uniformly. On referring to the state of the tide, it was found to be just high-water at London Bridge about this time, connecting the formation with the wurm water from the sea. After 5 h. 40 m. we were higher than all clouds near us, excepting the uniform strains cloud above us, which we nover approached; and it was noted that the upper surface of the lower clouds was bluish white, the middle portion the pure white of the cumulus, and the lowest a blackish white, and from which rain was falling, and, as we afterwards learned, had been falling all the afternoon. We descended to 1300 feet scarly, but were still above the clouds; we then rose to 3000 feet, and rain fell upon the balloon from the apper stratum of cloud, and no difference of temperature from 54° was observed in the stratum between 1300 feet and 3000 feet, ulthough a short time before, in passing downwards through this distance, the temperature had increased from 48° to 54°. The falling rain equalised the temperature, The balloon began to descend after this, and fell at 6 h. 15 m., near Woking in Surrey. The evening looked so unpromising, and rain was still fulling, that it was thought unadvisable to fasten the balloon for the night, and attempt a high morning ascent, as was contemplated. In this ascent the observations of the barometers and Daniell's hygrometer were made by Mr. J. MacDonald, Assistant Sectetary to the British Meteorological Society.

Accent from Helverhampton, September 5.-This ascent had been delayed, owing to the unfavourable state of the weather. It commenced at 1 h, 3 m. r.m.; the temperature of the air was 50°, and the dew-point 50°: at the height of one mile it was 41°, dew-point 38°; and shortly afterwards we entered a cloud of about 1100 feet in thickness, in which the temperature of the air fell to 364", the dew-point being the same; thus indicating that the air was here saturated with moisture. On emerging from the cloud at 1 h, 17 m, we came upon a flood of strong simlight, with a beautiful hims sky, without a cloud above on, and a magnificent sea of cloud below, its emface being varied with endless bills, hillocks, mountain-chains, and many snow-white masses rising from it. I here tried to take a view with the camera, but we were rising with too creat rapidity, and going regod and round too quickly to onable me to do so; the flood of light, however, was so great that all I should have needed would have been a momentary exposure, as Dr. Hill Norris had kindly furnished me with extremely sensitive dry plates for the purpose. We reached two miles in height at 1 h, 2t to.; the temperature had fallen to the freezing-point, and the dew-point to 26°. We were three miles high at 1 h, 28 m., with a temperature of 18°, and dew-point 13°; at 1 h, 39 m. we had reached four miles, and the temperature was 8°, and dew-point -15°; in ten minutes more we had reached the fifth mile, and the temperature had passed below zero, and then read -2°, and at this point no dew was observed on Regnault's hygrometer when cooled down to -20°; but a dew-point obtained from the readings of dry and wet gave -36°.

Up to thin time I had taken observations with comfort. I had experienced no difficulty in breathing, whilst Mr. Coxwell, in consequence of the necessary axertions he had to make, had breathed with difficulty for some time. At 1 h. 51 m, the barometer reading was 11:05 inches, but which requires a subtractive correction of 0.25 inch, as found by comparison with Lord Wrottenley's standard barometer just before starting. I afterwards read the dry thermometer as -5°; this must have been about 1 h. 52 m., or later. I could not see the column of meronry in the wet-half thermometer, nor afterwards the hands of the watch, nor the fine divisions on any instrument. I asked Mr. Coxwell to holp me to read the instruments, as I experienced a difficulty in seeing. In consequence, however, of the rotatory motion of the balloon, which had continued without easing since the earth had been left, the valve-line had become twisted, and he had to leave the car and mount into the ring above to adjust it. At this time I looked at the barometer, and found it to be 10 inches, still decreasing fast; its true reading, therefore, was 91 inches, implying a height of 29,000 feet. Shortly afterwards I laid my arm upon the table, possessed of its full vigons, and on being desirous of using it, I found it powerless; it must have lost its power momentarily. I tried to move the other aim, and found it powerless also. I then tried to shake asyacif, and succeeded in shaking my body. I seemed to have no limbs. I then looked at the barometer; and whilst doing so my head fell on my left shoulder. I struggled and shook my body again, but could not move my arms. I got my head upright, but for an instant only, when it fell on my right shoulder, and then I fell backwards, my back resting against the side of the car, and my head on its edge; in this position my



16. Suglar - In sugar that "Hallow here B), int riell have the to the So the Am

sys were directed towards Mr.; towerd in the ring. When I shock my body I second to have full poses over the numerics of the size, and considerable oper ever these of the nucle, but more over their may naw or my picin fact I second to have men. As in the case of the sums, all mension power was bet in an instant from my instant instants below the size of the sums, all mension power was bet in an instant from any instant instants below distance mean, the opin serves finally best oper substituty. I was sell conscrises, with a scatters berinn as at the present measure which writing that. I downght I had been select with applying, and that I chooled apprise me more, as doubt would once, unless we specify descended - other theirgine was entirely entering my index, when I molitarely because noteconicious on in poling to deeps. I cannot tall anything of the sense between its and evere mile high) is sent that no sould reached the calls. Such calls of the size of the contraction of the contract

My last observation was mode at 1 h. 54 m. at 25000 feet. I suppose two or three minutes fully were occupied between my ups becoming inscribed by sowing familiaries and 1 h. 54 m., and then that two or these minutes more passed till 1 was insamiliar; therefore I think this took place at short 1 h. 56 m. or 1 h. 57 m. While powerhood 1 south the word, "inspectation" and "absentation," and I have Mr. Courell was in face or specializing to me, und endestvering to strone may be supposed to the contraction of the strong to the strong

I resussed any observations at 2 h. 7 m., recoiling the "normeter residing at 11-25 index, and temperature". I suppose that there or four instance were composed from the time of my benefit of the verde "temperature" and "observation" will I began to observe; if m, then returning consciousness cause at 2 h. 6 m, and this gives avera minute for the alloweshibity. I found the water in the execut explying the week-that therements that I had by frequent disturbances that from the returning consciousness cause at 2 h. 6 m, and this gives the contract of the

Mr. Corwell told me that whilst in the ring be fair it is picrosticy ood; that hour-frost small round the neck of the hallon. On starpeling to leave the ring fast double, however, and he had to plove his stress on the ring and doup down; that he thought for a memor I had held back to set specify that he spake to no without electrics; a rely; I had be the maleried as play replicated and any same bang down by any dock, that any constant is the stress of the stre

No inconvenience followed the insensibility; and when we dropped it was in a country where no conveyance of any kind could be obtained, so that I had to walk between seven and eight miles.

The descent was at first very rapid: we passed downwards three miles in nine minutes; the balloon's career
was then checked, and we finally descended in the centre of a large grass-field belonging to Mr Kersall, at Cold
Westen, sever-and-a-balf miles from Ladlow.

I have already said that my last observation was made at a height of 20,000 feet; at this time (f. 5 tim), we were societable; at the tim of 100 feet by minter; and when I remained observation we were domesting at the state of 2000 feet per minter. These two positions must be connected, taking into account the further of a time between, with 13 minutes and not those considerations the halmon must have articuled the attilistic of 55,000 or 37,000 feet. Again, a very delicitor infrintum thermometer real.  $-12^{\circ}$ , and this would give a height of 37,000 feet. Mr. Caverdi, no coming from the freq in general test the same charges, in the head, and a nope attacked to the ear, were all that the same for the same charges, the first head as a report which the same for the same of the morne of the same for the same for the same of the morne of the same for th

In this secret is pigeons were taken up. One was thrown out at the height of three miles, when it starthed its wings and dropped as a piece of puper; a second, of for miles, few 'rigorous') round and round, apparently taking a dip each time; a third was thrown on thewere four and five nine, and it full downwards as a stone. A forether when there one of the one lines on descending. If there is a cirile, and intributy highest on the up of the halloon. The two remaining pigeons were brought down to the ground. One was found to be ideal; and the other, we want living, not would not love the head when I stamped to those it of all other a quarter of an hour it began is upon a proper of the head when I stamped to those it of, all other a quarter of an hour it began is upon a proper of problem which excited its next, and was thus juried off the Shapite the 10th, and it is easily out that he were friends and the pigmen attention is the Volvelingstown

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Ascent from the Crystal Palace, September 8 .- The sky was for the most part elsecured by clouds; the ascent took place at 4 h. 47 m. 28 s. P.M., the temperature on the ground being 67°; at 4 h. 52 m. we were half a mile high, with a temperature of 59°, and dow-point 54°; at 4 h. 55 m. we reached the clouds, with a temperature of 514°, dew-point 46°, at the height of 4300 feet; we rose to 4800 feet, were still in the cloud, and then fell, passing out of the cloud downwards at 5 h. 1 m., with a temperature of 49°, and dow-point 46°; we descended to 3300 feet by 5 h. 7 m., where the temperature was 52°, dow-point 50°; we then ascended and again reached the cloud at a little over 4200 feet, and with the same temperature as before, viz. 514°; we passed out of the cloud at a little over 4500 feet, into a basin, with hine sky above, and the sun shone beautifully; the balloon rese quickly, and the temperature increased from 51° on leaving the cloud to 57° at a mile in height, and to 59° and dew-point 40° at 5400 feet; we then desceeded, met with the cloud again at 5 h. 25 m., at the height of 5000 feet nearly, and experienced a temperature of 51°, dow-point 45°, whilst passing through it; we left the cloud at 4400 feet high, and the temperature rose from 51° to 61°, dew-point to 50°, at the height of 800 feet, and to 62° at the height of 700 feet, where we were at 5 h. 55 m.; at this time we were crossing the river Thomes, near to Gravesend, and we passed from bank to bank in 121 seconds; we then rose to nearly half a mile, and passed Tilbury Fort at the distance of 2 miles; and with a telescope I examined the Fort, and could have drawn its plan and counted any guns within it. We fell at about 4 miles from the Fort at 6 h. 10 m. r.m. In this ascent Mr. W. C. Nash, of the Magnetical and Meteorological Department of the Boyal Observatory.

Greenwich, took the observations of the barometer and Daniell's hygrometer.

TABLE I .- METEOROLOGICAL OBSERVATIONS MADE IN THE BALLOON ASCENT FROM WOLVERHAMPTON, SEPT. 5, 1862.

Reference to Notes.		Olphen Da	hoseter.	Anerota		Diy and	Wet To	mone	icin (001).	Negretti.	bey	und Wes (supi	Therton med).	cuetors	Bygne	orters.
	Time.	Reading corrected and reduced to 32° Fahr.	Att. Therm.	Barry meter, No. 1.	Height altera Son-level,	by.	Wet	Def	Deur- point.	Zambes's Gridleun Therman meter.	Dry.	Wes.	EAR.	Desc. petal.	Dentritle live- print,	Rep mairs low- posst.
_	R. R. S.	Inches,	56-0	Inches.	Seet.					0	0		0			
	1 5 30 P.M.	28:57	28.0	28.00	1,290	56-5	10:5	4.0	47:9			1				
(1)		28:38	57-0	28:35	1,480	35-3	51-1	4.4	40.9							
		26-19	55.0	26:20	0.660	45-3	43.5	3.0	41.2		46:0	43.8	2.2	43-8		42-
				25-82	4.116	44.2	42.5	1.7	40-4	44.3	10.0	100		11.0		44.
		25:491	54-0	25-62	4.386	1	44.0				43.3	41.3	1.8	39:3		281
	1 12 0	24-994	53.0	20.60	4,920	42.0	40-5	15	38-7							-
	1 12 30	24 894			5,011	41.0	20-8	1.2	58-3	49-7						
	1 13 0	24:50	1 :: 1	24-45	5.675	39-5	38-2	1.8	39-3						2810	
20	1 13 20	24:25	52-0		5,722	38-0	37 -2	6.8	36-1	i " i						
085	1 14 0											1				
(4)	1 14 30	28-70		28:50	6,530	36-5	36-5	0.0	36-5	24.5		1				
5	1 16 0	23:85	50.0	23:40	6,729											
(6)	1 16 30					36-3	36.3	0.0	36-3	36-0						
	1 17 0 ,,	23:20	50-0		6,914						36-0	36-0	0-0	36-0		85
T)	1 17 29 ,,				-**	38-2	36.1	2.1	23.3	30-8						
8;	1 17 49	22-658	49.0	22.71	7,575	20-0	35.3	3.8	30.5	40.0						
8,	1 21 0 .,	30-717	46-0	20:00	0.926	33.5	31.1	2.4	26-6	82.1						
10)	1 22 0 ,,	20-070	45.0	20.17	10,770	31.1	80.2	0.0	29.3	31.2	**	94	14		**	23

<sup>(1)</sup> Misty. (2) In cloud, wholly observed. (3) Lighter. (4) Much lighter, still in cloud. (5) Gan heard. (7) Out of cloud. (7) Out of cloud.

<sup>(8)</sup> Tried Camera upon boantaful clouds—failed; the ballons was spirating and according too quickly.

(9) Deep blue sky.

(9) The ice not properly formed on Wet-bulb thermometer.

Table I .- Methodological Observations hade in the Balloon Ascent of Sept. 5th.

References to Native		Stylus Sevenner.		motor. Apenid House		Dry and	Wet Th	станае	ams (Ove).		Dry and Wet Themacuseters (squiresed),				Hygroneters,		
	Time.	Reading surrected and reduced to 32° Fabr.	Att. Decu.	Baro quetre, Na. I.	Hotels above Sendriel.	Dey.	Wet	IME	Dre- poist,	old Zamben's Gridges Thermo- liketer.	Sey.	Wec.	t est.	Dep- point.	Describe Description.	Heg- tanta's Seve- polat.	
	0. M. S. 1 24 0 P.M. 1 25 30 1 25 9	18-727 17-931	42.0	16:10	5tet, 12,568 13,715	25-5 23-2	25-0 25-0	0.5	21.8	26-5	24.5	23.0	1-5	14-5	*	25-	
	1 27 0	16-936	36-0	16-90	15,164	17:2	23-0										
n	1 28 8	10-686	36-0	16:65	15,510	16.5	19:0	1 ::		18-0	17-0	24-0					
	1 29 20	10-046	32-0	15-82	16,520	16.2	17:0			17-6						10	
2.	1 30 15	1 ::				16.0	13-1	29	- 9-2	16:2							
	1 30 30	15-56	39:0		17,590	15.0	12-1	2.9	- 10-3	15-5	17-0	15.2	3.8	-15.7			
3) 4)	1 31 0	14:651	28-0	14:30	IN 1890			1.0	- 10.0					-		-5	
i	1 36 0	14-553	27:0	14:50	19,004					15-6	15-5	11-3	4:2	-21:1			
	1 37 10					15.0	11-1	3.3	-18:1	15-8			1	-22	- 8:0		
	1 37 50	11-460		14-60	19,222			1 "		10.7							
(8)	1 37 50	=		14 40		14:5	10-2	4.3	-13.0		11:2	10:3	3.7	-18:1	-16-0		
- 1	1 38 10 ,,	14-917	30-3		19,961	13.2	10-0	3.3	-14-8	12.9		10 0		-,			
x.	1 38 25	18-917	30.7	14-28	20,126												
"	1 38 35			11:00				4									
7.	1 38 50	13:76			20,313	8.0	6.5	5-3	-21.7	8-0 H-5							
`''	1 40 0		1 :			10-2	8.1	2:1	- 8-2	9:2	+4				- 9-0	- 15	
(8)	1 40 30	10:35	26-0		21,192	1 ::	1 ::	1 ::	1 2	11-0	9-5	7.8	1.7	- 5.8		-15	
190	1 41 50	10.00														-10	
10)	1 41 50	12:754			22,580	8-1	i.2	3.9	-26.0	4.2							
12	1 45 0	11:934	23.0		23,976	0.0	-1.0	4.0	-35-2		7.5	4.5	2.8	-17:3		I make	
	1 30 0	11-254			25,370	-5-0				- 2-0 - 3-0	5					(-30	
14)	1 53 ±	9 753	:		29,000				"	- 2.0							
	2 7 0	12:334	10	11-53	25,318 23,021	-3.0											
	2 8 45	12:534 13:134	25-6	12.80	22,651	1 :		1 ::		+ 2·0 11·0				Ι.			
- 1	2 9 0	14-054	1 :	16:45	20,018	17:0	11.0	8.0	-34:7	18-9		1					
- 1	2 9 40	17:074	1 :	1 :	14,538	22.5	15.8	8:7	-27:0								
i	2 11 0	17:71	-		14,012			1		23-2							
	2 14 0	18:05			13,520					24.3	24-8	18-0	6-2	-10-6			
15)	2 15 0	18-455		19:10	12,100	26-5	18-2	8.3	-22-4		44.8		0.8	1-10-0			
16)	2 10 10	10-753	::	19-10	11,150	26.3	18.2	1 0,3	-21.4								
17)	2 16 50	20.653	27:0	20-65	10,070	31-1	23.1	8:0	+ 2.5	31-1							
	2 17 30 2 18 D	21-151	1 ::	21.55	9,870	33-0	25-0	8-0	3.3								

Karth visible in patches.
 Wr. Coxwell pants for breath.
 Onese: Moffat 0; Moffat second paper 5; Schliebein 1.

(0) Onne: Moffat 0; Moffat second paper 5; Sebönbein 1. (9) Onne: Moffat 4. (10) See with difficulty. (12) Aspirator translosome. (13) Sand out. (15) Onne: Moffat 5; Moffat second paper 5; Sebinbein 2.

meda correctly. (3) Oness: Media 2; Mollat 2; Schünbein 0, (3) Mercury of Daniell'a hygropostete intrisible.

(5) Assal out. (4) Asspirator difficult in work.

(11) Experienced a difficulty in reading the instrumenta.

(15) On myself; could not use for red the instrumenta.

(16) Wind cost. (17) Gun heard.

2 t 2

(1) Sand out.

TABLE I.-METEOROLOGICAL OPSERVATIONS MADE IN THE BALLOON ASSENT OF SEPT. 5TH.

.		Sipton Bu	reseter.	Americal	Pun adv-rip	Dry and	Wes Ti	ortolese	toes (free).	Negretti	lity	and We (see	Therm (mird).	eprins	Ируры	Desert.
References to Notice.	Time.	Brading mercurd and reduced to 22° Fabr.	Atl. Therm	Bares meter, No. L		Dey.	Wet.	DAM.	Desc.	Zembra's Gridina Therma- mater.	Dey.	Wet.	102	Tiew- point.	Deni-tr's It-re- point.	Eog- torsicis, Eve- peter.
	2 19 0 P.M. 2 19 30	21:845	31-0	21-10	feet. 8,500	34-2	25-9	8.3	11.3		•		۰			
	2 20 0	23-011	53-0	-	8,310	32.3	27-0	8-3	13-9	35-3						
2)	2 29 30 2 29 40 2 21 30	22-241	33.0	22-20	8,000	10-1	20.3	11.9	15-2		**				14.0	
3)	2 22 0	:	:	::	:	42.2	31.0	11-3	17:3	40-0						
£	2 23 20 2 23 30 2 23 50	22:102	37:0	22.76	7.500	43-0	=	1	-	40°0		"				20.0
	2 24 0 2 25 0 2 26 0	23-92N 23-326 23-473	39-0 40-0 41-5	23.00	7,150 0,816 6,640	42-0										
5)	2 26 10 2 26 13	:	::		::	42·0 45·2	34-3	11:3	21.5	41-5			1			
	2 29 0	24:512	46.0	::	3.500	49.2	36.0	15.5	21.8	15-3	**					87
6)	2 30 30 2 31 0 2 31 30	5	:	:	-	10.0	35:0	14.2	19-7	47-0	47-1	44-1	3.0	10-7	29-3	
	2 22 0	23-491	50-0	25:55	4,521	50.5	36-0	14-5	20-8	18-0						
	2 33 0 2 33 30 2 36 0	23.990	50-0	2	4,110	51-1	37-0	11-1	22.3						. 1	37-0
	2 38 0	20.300	50-0	26-35	3,484	59-0	43-0	8-0	37.0	51·5 53·0	53.0		"			-41
7)	2 38 30 2 39 0 2 39 90	27-508	50-0	;	2,260	54-0	48-0	6.0	62:1	54-0						
1	2 30 60	=		29:10		57-2	52-8	4-4	46-8	57-5						

<sup>(2)</sup> Wet-built seems to be free from ice.

TABLE II.—SHOWING THE APOPTED READING OF THE BARGHETER, CALCULATED HEIGHT ABOVE THE SEA, TEMPERATURE OF THE AIR, AND TEMPERATURE OF THE DEW-POINT IN THE SEVENTH BALLOCK ASCENT PROS. WOLVERHAMPTON. (See p. 234.) September 5.

Time of Observation. 7.8.	Escating of the Exponenter reduced to 33° F.	Steight above the level of the Sea.	Temperature of the Atr.	Temperature of the Dew-potes,	Time of Charrystics. F.E.	Reading of the Successive redsord to 32° F.	Bright above the level of the Nea.	Temperature of the Ale.	Temperature of the Dev-point.
	Stochen,	0 est. \$(40)			8.8. 5	Inches.	fort.		
0 0 0	44	4040	00-5	48-4	14 30	23-70	6,330	36-5	36.2
1 5 0	29-17	7:10	59-0	59-5	16 0	23:36	6,729		
5 20	26:97	909	57-2	50-1	16.30		(6,101)	36-1	36-1
5 50		(1,340)	36-5	47-9	17 0	23:21	6,914	36-0	83-7
6 0	28:38	1,480	55-3	46-9	17 20		(7,245)		33.3
10 0	. 26:19	3,000	45:3	41.5	17 40	22-65	7,575	39-5	30.2
11 0		4.116	44.2	40-4	21 0	20:72	9.926	32:1	26.6
11 30	25:49	4,388	43.3	281-9	22 0	19:07	10,770	31.2	26.9
12 0	24:39	4,920	42-0	3817	24 0	18-73	12,568	26.5	12:7
12 30	21.19	5.011	49-9	36-3	25 30	17:95	(13.673)	25:5	12.3
13 0	24:30	5,673	39-5	36.3	20 0		(14.312)	23-2	
12 20	94 -95	5 759	54-0	56:1	97 0	10:04	15 164		

<sup>(3)</sup> After this observation I pressed the ball of Wet thermometer between my thumb and finger, for the purpose of melting any ice remaining on it, or on the connecting-thread.

alming on it, or on the remnesting-thread.

(4) Opone: Mediat's test 6.

(5) We's hall access to be correct; it has decreased from the realing I dove it to by the action of the heat of my thumb and finger.

(6) I do not think Aspirated Wet-bulb is correct.

(6) I do not think Aspirated Wet-bulb is correct.

TABLE II.—SHOWING THE ADOPTED READING OF THE BAROMETER OF SEPT. 5TH.

That of Observation. P.M.	Bunding of the Serveseter reduced to 32° F.	Height above the level of the fea.	Trouperature of the Att.	Temperature of the Dave-point.	Time of Charrestee. P.M.	Rending of the Barreneses reduced to 32° F.	Height above the level of the fina.	Temperature of the Air.	Temperatur of the Daw-guist.
B. E. A.	terbes.	fret.			5 2 A	Stoches,	firet.		
1 27 30		(15,347)	18:7		10 0	**	(14,706)	22-5	
24 0	10.69	15,510	18:0		11 0	17:71	14,612		
28 39		(10,015)	17-9		14 0	18-06	13,520	24:5	
29 0	16-05	16,501	17-9		14 30	11	(13,210)	24-8	
29 29		(16,640)	17:8	10-5	15 0	18:46	12,500		0-0
20 0	1	(10,675)	10.2		16 0		12,230	26.5	
30 15		(16,965)	16.0		16 50	20-65	10,070	31-1	
30 30		(17,055)	16-0		19 0		(8,500)	34-1	
32 0	15:40	17.500	15.5		19 20	21-85	8.530		
34 0		(18, 180)		- 5-5	20 0		(8,400)	23-2	
27 0	14:35	19.064	15-6	-21:1	20 20	22:04	K 510		
27 29		(19.290)	15-8	- 8:0	20 40	22: 24	h. 650	40-1	15-2
38 0		(19,733)	14.2		22 0		(7,860)	42+2	17-2
38 10		(10,847)	12.9		23 20	22.64	7.625	40-0	20.0
38 20	14:05	10,900			23.50	22.93	7,200	40-0	
38 25	13-25	20,191			24 0	23-03	7,150		
38 50		(20.315)	8-6	- 2:0	25 0	23-35	6.810	49-0	
20 0	12:76	20,393	8-5		26 0	93-47	8,610		
40 0	10.10	(20,733)	2.2	- 2.0	26 10		(6.599)		
40 15		(20,818)		- 15:0	26 15		(6,500)	45-2	21-5
40 20		(20,903)	11:0	- 10 0	72 0		5.635	45-5	97:0
41 29	19.95	21.182		- 15:0	29.70	94-53	5,500	47:0	91.8
41.50		(\$1,497)	415		30 30		(5,110)	47:1	35-1
44 0	12:75	22,390			31 30		(4,720)	49-2	12.7
48 0	11:95	23,976	0.0	- 20:0	32 0	25:40	4.521	48-0	
50 0	11-25	25,382	- 2.0	no dese	32 30		(4.315)	50-5	20-5
51 0	10:50	26,350			33 0	95-80	4.110		
53 +	9:75	29,000	- 5.0		33 30	40 00	(4,650)	51-1	22-3
7 0	0.10	25,318	- 2.0		36 0		(8.735)	01.	37.5
16 700	19-55	22,654	+ 2.0		38 0	26-40	3,484	59-9	37:0
8 45	13:15	21,650	11:0		39 0	97:60	3,200	04.8	B1 0
9 0	14-63	20,018	17-0		39 90	21 00	4,250	34.0	42-1
9 30	10-37	16.615	18-0		3 0 0		on the ground	87-2	48-8
9 40	17-07	14,938	14.0		300		or my barens	91.7	40.0

The realing of Begmalit's hygrometer at 1b. 45m. was reduced to = 30°, without any deposition of assistanc; the impersions of the deer-point was therefore at a lower degree. At 1b. 45m, the temperature of the deer-point, as determined by the Dry- and Wei-built theremoraters, was = 35°, as shown below.

Mr. Glaisher's general remarks and conclusions, as derived from the eight balloon ascents here recorded by him in the Association Reports, are too important to be omitted:—

These sight accents have led me to conclude, firstly, that it was necessary to employ a balloon containing usurly 90,000 cubic feet of gas; and that it was impossible to get no high as air miles, even with a balloon of this magnitude, unless carboretted hydrogen, varying in specific gravity from 370 to 330, had been supplied for the purpose.

From the general agreement of the results so observed by Regusali's hygeometer and those of the dow-point as found by the Dry- and Wet-bulb thermometers, there can be no doubt that the temperature of the dow-point at heights exceeding 20,000 feet must have been as low as - 20°.

It is true that these statements are relate conflicting when compared with the statements made by one or two early travellers, who professed to have reached accuse line in height with small billoons. But if we recolled a cast 120 miles hight a volume of gas will doubt in bulk, we have a come a ready means of determining how high a halloon can go; and in order to reache a develope of a recurrent miles it is obviewed attendable of the balloon along it and now the towards and excellent of the contract mallies it so driven that excellent of the contract of the balloon about the order to each order to the contract of the balloon, inclusive of milligient balloot for the descent.

The asserted fullest taken up afferls another then us to the power of resoluting great heights. (69,7-leaser's billatts as before neutricol, was reduced to \$101. Real has all free; method as \$1,100 and \$1,000 and \$1,000

Secondly, it was manifest throughout our various journeys that cresselve ultimbe and extended ranges as to distance are quite incompatible. The reading of the instruments establishes this; and it has been pointed out what a short time the balloon held its highest place, and how releastantly it appeared to linger even at a somewhat lose skraiden. This was not swing to any beslages or imperfection in the balloon itself, for its efficiency has been well tested; and it remained insteat who night without the least preceptible loss of gos.

It has been stated by an acrossart of experience that strong epiposing upper corrects have been beard to produce an audible constantion, and to soom dike the "revents of a derivative." Now, the only deviation we experienced from the next perfect stillness was a night whiring noise in the netting, and this only when the balloon was rating with great rapidity, and a slight flooping on descending, when the balloon is in a collapsed state.

I may also state that the too readily accepted theory as to the prevalence of a settled west or north-west wind was not confirmed in our trips. Ner was the appearance of the upper surface of the elends such as to establish the theory that the elends assume a constructor of the earth's surface below, and rise or fall like bills of allest.

- Perhaps the most important conclusions which can be drawn from the experiments at present are:

  1. That the temperature of the air does not decrease uniformly with increase of elevation above the curth's surface, and consequently the theory of a decline of temperature of 1'in every 30° feet must be
  - abandoned. In some cases, with a clear sky, the decline of to the taken place within 100 feet of the earth; and for a like decrease of temperature it is necessary to pass through more than 1000 feet at beights exceeding five miles. The determination of the decrease of temperature with slevation, and its law, is most important;
  - The determination of the decrease of temperature with alevation, and its law, is most important; and the balloon is the only means by which this element can be determined; but very many more experiments are, however, necessary.
  - That the humidity of the air decreases with height in a wonderfully decreasing ratio, till at heights exceeding five miles the amount of aqueous vapour in the atmosphere is very small indeed.
  - That an aneroid barometer read correctly to the first place, and probably to the second place of deciuals, to a pressure as low as seven inches.
- That dry- and wet-bulb thermometers can be used effectively up to any heights on the earth's surface
  where man can be located.
- 5. That the balloon afferds a means of solving with advantage many delicate questions in physics; and,
- 6. That the observations one be made with tolerable safety to the observer; and therefore that the balloon may be used as a philosophical agent in many investigations.

The ascents which are most worthy to be compared to these in point of interest, are the ascents of MM. Biot and Gay-Lusses, made in 1804, for the purpose of scientific experiment, already given in this work. In reference to the eventful ascent of Mr. Glaisher and his companion, the following remarks are extracted from the "Times":—

#### SCHENTIFIC BALLOON ASSENT.

### (Leading Article from the 'Times,' Sept. 11, 1862.

Potry has described some flavour demot, and the facilit demots demot comes book with a familiar school recurs to an Time due from the substratement would not in these bodies to the reprise of their demonstrate due to great profess to have been made for scientific purpose; jett, pethyas, they exhabitis a certain spirit of the property of the propert

refuses to receive the constantly vanishing impression from below. They now reach a fearful altitude, where pigeons-the unhappy victims of all experiments-cannot fly, and where, at last, the rerity of the air is too great for the physical structure of man, and one of the explorers faints and becomes unconscious. Yet each is the determination of men when they are in the act of caperimentizing, and at the very climax of their feat, that they will not spoil it by a check so long as progress is possible; on they will go, and gradge forestalling their vertee by a foot, for every foot is so much gain and so much triumph. For ten whole minutes Mr. Coxwell ascended alone,-or rather worse than alone, with his companion insensible before his eyes, in a region six miles distant from the earth. That is a very extraordinary ten minutes if we think of it, that solitary command without a rival, of the boundless regions of space, when, for once, to be "alono in the world" was not a metaphor, and one head was working in the infinite void. It deserves to take its place among the unparalleled junctures and the critical and striking moments of war, polities, or discovery. But the feat was almost too audacious, and was carried on to the very verge of fato. Mr. Coxwell was only just in time to take the step which was necessary for a return to the lower world; enother minute and he would have been stretched by the side of his companion, and a car. containing two human bodies, would have been mounting to worlds unknown, and encountering aerial storms and shipwrecks so removed from all one sublunary esperience that we can hardly form the faintest image of the reality. We know enough of the geography of the heavens to know that it would not have been even dashed upon the bleak shore of a plenot, or found a resting place upon some Ararat in the moon. But Mr. Coawell's mouth performed the task which his paralysed hands were unequal to, and the release of the gas procured a descent, and gave a safe termination to the most sudacious serial feat over performed.

The courge of men of science deserves to have a chapter of history devoted to it. It has been observed that courge is a very apprison and the contrast virtue, and we fill of a know the off mendeds of the gallant veters as a hundred battle who down toot uniff out a caudle with his flagors. Courge is a thing of labit, and contains if fills allogate insmelables by it is out of the fills of it is habit. Nove had with vis cone who has began young and becomes a sort of Centus, only with the convenience of dropping off the animal part of his figure when he choose; his whole body, with its moored and sincest, has excummental in their to the back of a know, and sequired an intuitive and unconscious habines. But the him off his lower end, runkes be has the principle of courges within his, a bis or or offeren round, and no more likes beforehing his seet than a quick bandward tilms.

A soldier is accustomed to courage in company with gallant fellows around him; but that makes an immense difference. Company is both inspiring and relieving: it divests conruge of its horrors and gloom. It is therefore much easier to be bold in company. But send your bristling warrior a nocturnal walk along a lane, and he sees ghosts peeping from behind heyetocks, and hears supernatural voices in every gust of eir. The feats of a man of science give you a better guarantee for real courage because they are solitary, deliberate, calm, and passive. It is true he has his enthusiasm which helps him, and he has his field of courage to which he has accustomed himself. But every new venture, every fresh cassy upon this field is a solitary effort and impulse to him. He has to fight alone and by himself against the faintness of nature, without men shouting or flags flying, or trumpets clanging around him. He faces the invisible forces of nature, the gas that capledes or the poison that penetrates, with the countenance of a student and philosopher, and is at the disadvantage of having to be fully conscious and selfpossessed, instead of having the aid of the swing and impetus of passion. The coel feats of our scientific men are known to us all-such as that of Sir Humphry Davy inhaling a particular gas, with an accurate report every minute or two of its successive effects upon his brain and senses. The seriel voyage just performed by Mr. Coawell and Mr. Gleisber deserves to rank with the greatest feets of esperimentalizers, discoverers, and travellers. It is true these gentlemen have not brought down a very comfortable or inspiring report of the upper world into which they have penetrated. Science and poetry are unhappily rather at variance upon the subject of the air and sky.

Postry points upwash to the sky with glowing inpures as the sense of brightness and glory, and a rundome, then figures as the reward of breishman all questions. Everything is hopey and prisolated that is connected with the sky. But existence posterates with its material rye into those was a puper spaces, and simply respects a good afficulty of relateding there, that the blood respectates on the limbs become beaution, the senses everyoness, and attests faints as monoacolossomes. The very briefs will not by in that sky which is their posterial bosos. The delistencies in that no postry books up to the sky from belove, and ensire examines and faish in on a level. The sky in the emillion of postry—the fact of actionce. Both superts of it are equally true, but the point of view from which they are taken in quite different. But though our revert entire with the sky and the late like littless are pointers, but puts furnished one more striking and impressive some to the history of science. They have shown what enthusiasm striking and the science can implicate the main, set the main, set the cost says, had need of "triple sets does his because "who first learneded a best into the see, certainly those had no less need of it who first feated in the six is millied shows the surface of the outh.

> When accence from creation's face Enchantment's well withdraws, What lovely visions yield their place To cold material laws. Camputs.

On the 14th October, a pleasant party ascended from Winehester Barracks. To each of the members the idea that Schiller has so well expressed might be applied:—

> Wis spang, von kuhnem Muth befügelt, Beglückt in seines Traumes Wahn, Von keiner Stopp noch genüedt, Der Jangling in des Lebens Bahn! Bis an des Acthers beichtete Sorme Erhob ihm der Enterunfe Plag. Nichts war so bech und eichte so ferne, welcht im Stoppel ihm alekt Tene.

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Light, as by valour wing'd for air, On life illumed by morning leans, Sprang yotah, as yet uncur'ed by care. And blost in error's happy dreams (?): Un to the ether's faintest star.

Up to the other's faintest star,
Did wild design advecturous sour—
Oh, nought too high, and nought too far
For these strong pinions to explore,

Sea BULWAS LATTON.

A.D. 1862.



DIR IPEALS.

THE WESCHLETER MCCCST.

Two of the party wrote the following accounts :-

70 Miles in 66 Mineries."
To the Editor of the 'Times."

A most snoossful aerial journey has this day been accomplished from Winchester to Harrow, travelling at the rate of a mile a minute.

Colond M-Donald and six offeres of the fifth Popt Renders accompanied Mr. Cacwell in his manusch ballon. Before this could be residued year anxiety ballow in the 14 yell conserved. The distance from the geometre being half a nulle and the fast leavised years of piping having to be list draw ground through the pamages to the inner qualanged, Are the pipe was only for indistant, in diffigure that conserved as into orders a Nonlay mering. The weather was temportous, and strong equina-cital glace belowing from the north-work bringing beavy claude with rails andous presched any plon of our rarial vesque being either pleasant. or and,. Owing to the real of N. Timey, the gas manager, who appear do a bloom in providing the N/N00 color for gas—and to the DC Coverell's knowledge of the charge-plottees of the vewerfs, the enterprise was not absoluted. All the remargements made with calculation and frost-length by Orders M Donald waves successfully sumplicit every preparation in the ouvervalence of questions had been made; and the analytic and the properties of the properties of the lower properties of properties of the lower of the properties of the lower properties of the properties of

Still, owing to frequent squalls, it was undecided at three o'clock whether the ascent abould be made this day or postponed. A large crowd was, as pseud, elamorous, and foolishly careless of any risk, but it would have had ne effect in inducing Mr. Coxwell to " proceed " had not the sun come out and the heavy clouds dispersed. Then he decided, and the soldiars, obeying his signals with military exactness, drew the balloon to the windward side of the square; and at five minutes past four let go the rope, when we instantly rose in a majestic manner-clearing the corner we had so much feared by 150 feet-to a height of two miles. By passing over the Grange (Lord Ashburton's) eight minutes later we perceived that we were going at the rate of a mile a minute. The white and broken clouds were on this occasion between three and four miles from the earth. Our direction was E.N.E. We left Aldershot Cases two miles to the S.E., Virginia Water a mile to the N.W., and with great pleasure recognised the friendly shelter of Harrow-hill for a quiet descent. This, however, we passed by a mile, and landed in a grassfield belonging to Mr. Heavy Hill. Here, in the gentlest manner psacible, the grappling iron anchored us in the centre of the field, and, thanks to Mr. Coawell's judgment, without the slightest concussion. With the hearty goodwill of the villagers, and the obliging assistance of Mr. Hill, we packed up and carried our balloon to the railway station. It was 5.15 e'clock when we descended, and the distance we had travelled in one hour and ton mientrs exceeded seventy miles. As we reached the ground Mr. Coxwell was kind enough to show us the manner in which he performed the almost incredible feet of opening the valve with his teeth when seem miles above the earth (see p. 234.)\*

C. F. T.

London, Oct. 11.

Mr. Coxwell having stated to me that our flight in his halloon from Winchester to Harrow, on Tuesday last, was one of the most uncessful and interesting which have been made, I am disposed to effer a few additional observations to those of your previous correspondent.

He made a slight mistake as regards the time in which the journey was performed, the distance being got over in one hour and six minutes—foor minutes less than be computed.

It being occessary to more upwards with great velocity, on abilitional interest attacked to the ascent. The measurest the roys we loved by our grainly, or full first a positile movement, then a bound into spoon, shord a realisation of the "translation" of good now of old. It is hardly possible to describe how this more unstripped thought. A feeting within genued the mixed, of ferious hear becoming instartly distant, amount the waving of Auskineviket, the strains of mixed, and the cheers of the crowd; we were high in air, however, before we quall fracture three substations.

At the period our velocity need and have been here does not the rate of these miles a minute, our course describing a probable error, the hillsom being mored by two forces—pursuls by the dame masses of the lower at an anotherwise by the wind. This pass graduly besenced till we raduled our extreme abilities, superable of the district of the state of the s

It was interesting to note the difference of the aerial currents. Until we passed over Staines, rippled waters were observable, and we anticipated a rough descent; near there, bewever, some smoke was seen to blow towards

<sup>6</sup> The party consisted of Colonel McDouald, Major Newligate, U. Ramabettam, W. M. Burrell, C. Fairfield, H. Turnor of the Prince Context's Own Refic Brigade, and J. S. Algar of the 60th Rifles.

the west, although our direction was notherly, indicating a lower and different current of wind. After our obscured upon States we noticed our pure low administration, and that we were probably morning at the state of thirty-free miles as hear, which pace appeared uniform until half a minute before tenching ground, under the abstract of Harrow-hill.

London was to be sows, a great back of fog, with buildings in its contilers, which we left on our right.

I ought us to forget to sention a very limited efter produced by the san articing as a cloud over the lot of Wight. The cloud shows with an intensity equal to electric light. Now should I forget our passage over the familiar reason of undesting rough is which we had figured—the great date plains althous haster of Martine Thave as efficiently legislated in the should be a first the start post of our holismans, who printed out the value of hallows in military recognitions. Although at the height of two miles, any manesterms good that the plain stell date, been only seen. Even troop sceroted behind the locarrie, or in the hallows of Conar's Camp, would have been only seen.

A Winchester poet takes advantage of the occasion to refresh the mind by apt comparisons:—

ON THE ASCENT OF A BALLOON,

"Tre well for man that his aspiring mind But in a Should limits to his beautiless wisders find: Au emb

With conine all expansive, and a skill Prompt to perform whate'er may be his will; And more than all, a heart to do, and dare His daty, or his releasure, careless where, What would his restless, tow'ring spirit stay, Uncheck'd by laws 'twere death to disoley? He threads the bottom of the bring deep, He climbs up spow-clad smagaits dreat and steep And midst the indeeps of the Esquasura Steers with a fearless belte his fragile prow; Nor yet to room on earth and sea contest, Up to the clouds he ventures as ascent; And thus determined, lo? the means at hand For this new voyage, which his bold thought has plured. Rehold you silten web so finely spon, The worms prepar'd the skeins that thre' it can : With wondows life inspir'd, aloft it mare Its form, as broogsat as the starry spheres, And like a courser fretting at the rein That serves awhile its spirit to restrain. See how above those weights, that lid it stay, It beaves, and rolls, and strives to year away, At length the word is giv'u, and with a bound It surpes up, and graceful leaves the ground. Then upward, upward, with majestic field It soon ascends beyond the reach of sight, View'd and admir'd by twice ten thousand eyes That curer watch'd its blending with the skies,

The loftiest angels fell for lack of this,

And changed for endless was their scats of blus.

But in that soaring globe the muse would see Au emblem of a glorious immortality; The pow careering on, ere hunching forth, It seem'd a combiness mass ween the carth. Lifekes it by, as the unfit to rise, And sail in triumph thre' the lofty skies Thus failen man is seen laid dead, and down, Beneath a lead of trestoss all his own. But when the Spirit of the living God Breathes in, and fills with life that mortal clod-No longer dead, it moves, and straight begins To rise above the burden of its sans. It sees the blood from Jesu's side that flow'd. And wade all enacell'd three the debt it ow'd. And as those weights that being upon the net Did still field its upward soring yet, Until the signal, roll of deep structure. Was given to bid the voyagers mount from bence; Thus hambled still with many a weight within Th' imprison'd and inscents its state of six, Yet by the power of proper and faith made strong It learns to bear and lift itself along ;-Labring with constant struggles to be clear From all these transmola that detain it here: Till the last hour of life-and then are seen Those doep librations, (sith and sight between, When fully conscious of its near release With treubling hope and joy, and deep-felt peace, Freed from each earthly tie, each sin forgive, It wars sublimely to its blood-bought Heav'n-Whilst weeping friends look on, and praise the Lord For His abounding grace and faithful word .- J. C. P.

1863.—Mr. Glaisher continues to make many interesting and useful scientific experiments with regard to the atmosphere, by the assistance of Mr. Coxwell. In one of these pleasant excursions on the 11th July, the author accompanied them, and the following is the account:—

Coasting in a Ballock,
To the Editor of the 'Times,'

Chiebester, July 12, 1963.

On a former occasion you did me the honour to insert an account of a balloon trip till then the most rapid on record; and I now hope that you may again find room in the valuable space of your journal for an account of a A.D. 1863.

trip made yestorday by Mr. Glaisher and Mr. Cexwell, in which, by their kind permission, another gentlemae and myself were allowed to join.

Having previously obtained the knowledge, from observation of the clouds and a paper-pilot, that the lower current was flowing almost due west, while the upper was from north to seath, we rose quietly from the Crystal Palace at 4.46 P.M.

Mr. Glüsber, with a variety of instruments auromaling lim, commenced at one his observations, which I peep may be published. The lower current carried as towards Londen, and we almost begud to lack Elze with our cheere, but unfortunately we reached the upper current, and were carried abovely past Cryolae, where we observed touts, and a large concerns. We passed innecedantly over a heartfull park same Epone, which Mr. Glüsber photographed. We crossed the South-Eustern Entirway between Buckland and Bridgen't Form. Here the affi, following the current of the challed hand Bridgen'the event states and bright. Form. Here the affi, following the current of the challed hand Bridgen'the event states and regardent elevation, and much over a min, as we winded to go distance, not leight, hoping to cross the former!) but the significants of the intemplene disappointed on. After once origing the pleasure of seeing the first containing, we allowed there to expand, and remained at a lower adultst. Passing limediation of the containing, we allowed these to expand, and remained at a lower adultst. Passing limediation of the containing we allowed these to expand, and remained at a lower adultst. Passing limediation over

"The sea looks tempting," we all exclaimed; but, slas! it is seven o'clock, and our pace not rapid, so this must be postponed.

Mr. Cowell drops as into the lower current, and we cost about five unlies from the shore, as not more than 1000 feet, and assentines only 900 feet from the grownly. Noting could be more eighyshale. Villagers abouting to us to come down, and consistently answering our questions; the cheery reins of shiften; sheep facking on the Downs, not knowing which way to pr.; goes caching and a setting off to the farm, orbor brink remaining in troot; while a pack of founds was in the wildset excitement within their kennels, trying to go out. We passed immediately over the soaries of number and Judo kennels the descent convince and we went to root.

Mr. Coxwell thought at this time of crossing the Sokent, and landing in the lale of Wight; but the wind getting a little more southerly, and knowing the inconvenience of the country near Portsmouth for leading when dark, we took advantage of an open piece of great near the louse at Goodwood, and descended soon after 8 x x.

Hr. Coavell, after throwing a repa to a criticater, leaded us to greatly that we could not have crushed a dairy. We were afterwards drawn by a rope to the froat of the boare, for the benefit of a few gazare. I had hoped that Mr. Coavell would been tether his balloon and continue our journey next day; but it was Standey, and so he resolved to pack it up; otherwise, the upper current being again north, our wishes might this day have been happing excemplishing.

Our thanks are due to Captain Valentine, and other good people there assembled, for the assistance they gave us in packing up.

Mt. Glaishen's Twelfth Balloon Ascent.

To the Editor of the 'Times.'

Blackheeth, July 14, t843.

This accent was intended to have combined both extreme beight and distance, and almost until the time of leaving the cart there scened to be a premise that thot purposes in these respects could be realized. As the direction of the wind was almost due cast, the paths of the pilot-balloons were such as to indicate that our course would have been towards Devonship.

The ky was nearly revered with circus and circustratuse (solub, and the air was in very goaths notion. The secult was lift at 4.5 km, the halloon recording towards the sever lift h. 5.9 km, when, in a moneyt, we cause under the influence of a north wind, and moved almost does north. At this time the halloon was 2000 h. high. At 3.5, 1.9 no, we were nearly over Unterhallow, where a large named or pierons was collected orderining associafication. At 3.5, 50 m, we were near Epison Dowers, at 5 h. 50 m, more Displays at 6 h. 50 m, over Hendens; at the contract of the co

2 K 2

C. H. T.

therefore abandoned the attempt. On descending when at the height of about 2400 ft, we again fell in with an east wind, being exactly at the same elevation as we last it at five o'clock. After this time we were compelled to keep at a low elevation, and moved very nearly parallel to the coast, at the rate of about fifteen miles per hour, at elevations varying from 1000 ft. to 2000 ft., till at 8 h. 35 m. we were over Goodwood Park, the seat of the Duko of Richmond, where Mr. Coxwell determined to descend, and managed the bulloon so that finally it had to

be pulled down, and we were not aware when the car touched the earth.

The temperature at the time of leaving at the Reyal Observatory, Greenwich, was 731 deg.; at the Crystal Palace it was 74 deg.; in the balloon it darlined to 50 deg. by 5 h. 4 m. at the height of 3600 ft. We then cutered a warm current, the temperature increasing to 61-5 deg., then decreased to 60 deg. at the height of 4300 ft. We determined to descend to repeat these observations, and found all temperatures down to 3000 ft. nearly 5 deg. higher than at the same heights on ascending. We then turned to ascend at 5 h. 35 m., and the temperature decreased gradually, agreeing with those at the same slavations as last taken, and continued to a height of 620) ft. at 6 h. 28 m., where the temperature was 521 deg.; we continued at this elevation with very slight variations for half an hour, during which time the temperature fell from 1 deg. to 2 deg.

At 7 h, we were nearing the coast, and we descended to 900 ft, by 7 h, 20 m., the temperature gradually and constantly increasing to 65 deg. From this time we were meving westward, almost parallel to the coast, and were compelled to keep below 2000 ft. to avoid approaching the sea; and the temperature at these elevations varied from 63 deg. to 65 deg., and was 684 deg. at Goodwood at 8 b. 50 m., about ten minutes after we had touched the ground. At this time, at Greenwich, the temperature was 64 deg.; at Brighton, as communicated to me hy Mr. I. O. N. Rutter, it was 68 deg.

On comparing the successive temperatures at the same elevations, taken after 5 h. 8 m. with those at Greenwich a corresponding decrease was shown, but somewhat less in amount.

At 5 h. 27 m., when at the height of about 3000 ft., the "Times" newspaper, folded four times, fell over the car. Its descent was watched. After a time it looked like a gull. It reached the ground at 5 h, 35 m., passing over seven or eight fields in its descent.

White passing from Brighton to Chichester, without any scare of motion ourselves, at an elevation of less than 2000 ft., ever so beautiful a county, in all respects like Devenshire, with its fine parks of forest-trees, noblemen's mansions, and all the features of rural landscape,-a moving panorama, in fact, of great extent, appearing in quick succession, like a fairy scene,-the prospect was most enjoyable; and I must confess it was with some regret that we were compelled to conclude this serial voyage.

The currents of air on this occasion were remarkable; there was ne transition state from one to the other; the stratum of air moving from the north must have been in contact with that from the cast. After nearing Horsham the north wind must have been compounded with some west; that is, at beights exceeding 5000 ft., which was lost on falling below this height, for then for a time we were moving towards Worthing. When near the south coast the smoke was frequently moving in a different direction to that of the halloon; at Arundal it was tuoving in the opposite direction. It was this uncertain state of things which prevented us from passing to the Isle of Wight, as I vory much wished to have some observations over the sea,

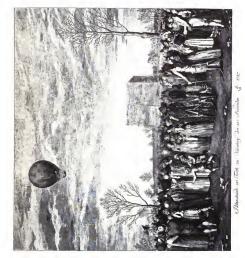
At the Royal Observatory, Greenwich, the horizontal movement of the air between the hours of five and nine was at a rate less than two miles an hour; while during three bours and three-quarters the balloou had passed between 60 and 70 miles.

It is very evident that our instruments on the earth do not give any indication of the real velocity of the air. A similar result was shown last year in Mr. Coxwell's rapid journey from Winchester, of 70 miles in 65 minutes, while the anemometer at Greenwich registered 14 miles only; and every occasion on which the actual motion of the air has been measured by the balloon it has been a multiple of that determined by instruments. The difference between the two is so large that it seems scarcely to be accounted for by the audulatory nature of the surface of land, and implies that our latherto estimated velocities of the oir are errossous.

Shortly after we left, the sky was overcast, mostly with circu-stratus clouds of such density that at times there were faint gleams of light from the sun; but for the most part the sun's place was only just discernible, and for some time before annect there was no trace whatever of the sun.

These clouds, when viewed from a height exceeding 6000 ft., seemed then to be as far above as they did when viewed from the earth; they must have been four miles high at least. The atmosphere was thick and misty, very





distant objects were invisible, and the earth, not being lighted up by the sun at nll, was dull, the fact of clouds reaching to four niles high, where the temperature of the dew-point must be some degrees below zero, as in the preceding ascent, implying the presence of very little water; yet them was enough in both cases not only to be visible, but to exhade everything beyond them. This fact is important, and indicates that our theory of report must be accommodated.

We were firenered on this occasion with the company of Mr. Frederick Norris, of the Conservative Club, and Lientenant II. Turnor, of the Rife Brigado.

The place of descent was Goodwood Purk, the sent of the Duke of Richmond; and our best thanks are due to Unitain Valentine for the assistance he kindly gave us in everything—not only in having my instruments properly taken ears of packing up the bulloon, dee, but also for his kind hospitality.

JAMES GLAISBLE.

An ascent in Mr. Coxwell's Mammoth Balloon was made on August 31, from the Cricket Ground at Newcastle, during the Meeting of the British Association. The account is extracted from the 'Newcastle Daily Chronicle':—

This ascent took place vesterday, and the popular interest evinced was decidedly greater than that excited by any other event connected with the Association. Everybody could share the pleasure and excitement produced by a bulloon ascent; and the great mass of our townsfolk did share in it. The Mayor, on the requisition of a number of our leading firms, had wisely appointed that the afternoon should be holden as a general holiday. The consequence was that all the positions surrounding the Cricket Ground, from which a view of the balloon could be obtained, were occupied early in the afternoon. In the enclosure itself, some handreds of the members of the British Association were assembled. The inflation of the bulloon began about half-past one in the afternoon, and was not completed till nearly six in the evening. The balloon employed on this occasion, we believe, was constructed by Mr. Coxwell specially for scientific meents. It is of immease size and beautiful form, and requires 95,000 feet of gas to inflate it. Mesers, Coxwell and Glaisher usually perform their journeys alone; but on this occasion they were accompanied by Master G. W. Lee Glaisber, a son of Mr. Glaisber, about sixteen years of age. Captain Bond, Mr. Smith, and Mr. J. Pullan, one of our reporters. When Mr. Glaisher had arranged his delicate instruments, and Mr. Coxwell had adjusted his still more important machinery, the norial monster, amidst the plaudits of the spectators, swiftly and steadily left the earth. The clouds were low at the time, so that the balloon was speedily hidden by them. As it rose higher, however, it was seen and lost again repeatedly as n diminishing object in the heavens. Glistening in the snalight, it was not entirely lost to view for half an hour after it left the earth. The ascent was made so near to the court that the direction of the wind was a matter of some moment, and several " pilots" were despatched to ascertain it. As the great balloon itself ascended, it tack a southerly direction, but diverged alightly to cast as it got into higher currents of air. The proceedings were enlivened by the performances of the bands of the 1st Newcastle and the Northumberland Artillery Volunteers, permitted to be present by the kindness of the commanding officers. The balloon was the "Mammoth" with which Mr. Ghisher and Mr. Coxwell have made all their scientific ascents.

Having described the balloon as seen from the earth, we will now describe the earth as seen from the balloon,

#### THE VOYAGE.

The following is the account of our own reporter, who was favoured with n place in the balloon:---

At twelve minute past is clubed, and clered by the burshs of the scenabled people, we row monthly from the cent. Thus light of the showand peopured force, all revising associations and adults, was a fair prating across, and consend wall far our evaning varyan. The first glance around showed that not only was the Uridori Ground through with peoptime, but in the algoriest trives people aspected to be slowly parked. The term by below us, the streets, squares, howers, spins, and miniments aproad out as we then in bose old regardinggray with the age of centrates. These cross make a constraint of the contraction of th to confine the mind, and before my thoughts were sufficiently suffered in allow me to take a systematic energy, we were into a clock. The fixes of being no some anamyth the deshed all soft at the measure event use, and my fixed imprecision was, that we were possing through a vision of Noroscala makin particled by its ascent from the fixed fixed fixed from the property of the transport of the state of the

This was directly bound to, and as we remained over it for several minutes, it was clear that we were not making much convert properts. Upward, not consult, we see upword airs. The levent that had reduced the "Manuschel" billion to said for so also seeing at archive in the green in the Crisin Ground, had been an indireter. A summary of the control of the control

The Type from Newcorks to Typemonth we are about that the plocust watering pion appeared to have become a close softent of Newcorks in all too at Mr. Caverall some of me of the first, become a close softent of Newcorks in the too Mr. Caverall some of me of the first, become a close of the limits have responsed the liftin beam a close to the best had been asked as the position of Typemonds of the second section of the second section of the second section of the second section of the position of the position of the section of t

The eap and imperceptible unling of our artial currings was a larger than has a possible on earth. Perfect Croden from all revising adutance grow an osauthing of the feeling than upbe impigate in bloody to a fast, souring on the wing or broped metricules in the sir. The sense of danger was not at all strong, and may four that might arise were detected rather than increased by the selection that if the haltone obligate or its nope above, undange and lover as. There we were, soil, being them, the only thing to do we as make the level of our position, tenting the selection of the several voyages, applied themselves, ander Mr. Coxwell's directions, to the throwing out of ballast when required; but first of all to the important work of disengaging the heavy iron grapuol from the cur, and lowering it to the extent of a long rose. It then awang in the region below us, and served, by its inclination from the course taken by the balloon, to indicate the direction of our progress. Proliminary duty done, we refreshed ourselves with ginger-beer, and prepared to ascend higher. Mr. Coxwell directed my ottention to the descent of a cork which he threw out of the car, and which could be seen descending through the space below as for several minutes after it had left his hand. Scram of paper thrown out of the balloon served by their ascent or descent to show whether the balloon itself was ascending or descending, and we frequently lad recourse to these flickering agents

The earth seen from the height of a mile and a half presented the appearance of a vest bowl. Bivers could be distinguished and traced, towns and villages were clearly visible, but could not be identified, while cultivated lands were distinguishable by their various shades of colour, from the yellow hue of the cornfield to the brown of ploughed land and the green of the meadows and pastures. Trees appeared as low and stumpy as the hedgerows; but the sombre, solid, and massive grouping of extensive woods rendered them easily distinguished. Trains could be seen running on the lines of railway in almost all directions; and should people over travel in bulloons, and leave locometives to convey goods only, they will assuredly believe, that with trains following so closely ofter each other as they appear to do when seen from above, kullsons are a safer means of convoyance. The observations I have roughly recorded were the results of scarce one-tenth of the time now occupied in writing them. Turning the gage npward, a clear blue sky overarched us; below, fleecy clouds were thickly closing in, and thus shutting out from our view all terrestrial prospects. Having passed through clouds, the effects of the sun in expanding the volume of gas, the inexpert management of which resulted in the death of Mr. Chambers et Busford, were clearly illustrated.

The balloon was swollen to its fullest extent, and from the safety-valve at the mouth of the neck the gas could be seen rushing out in a strong current. The gas thus given off did not affect the voyagers at nil, nor did Mr. Coxwell, whose face was almost in the midst of it, experience any ill effects. This says a good deal for the present purity of the gas of the Newcastle Company. While the neck was open a look into the interior of the balloon was not without interest. The gas in it derived a yellowish line from the colour of the skin of the balloon, and was so transparent that the valvelar apporatus at the top could be plainly distinguished. One of those pictures of celestial beauty that well repay the risk of a balloon ascent was vouchsafed to our party. The scenes of earth had not been so varied or extensive as they frequently ore; while the state of the atmosphere and the low situation of the clouds, tended to diminish what little of the picture-que belongs to the rather proxy district of Nowcastle and its environs. But the scenes of the sky were truly colestial. The balloon swung in the centre of one vast and hollow globe. The concave section beneath us was composed of light grey cloud-lend, as it might be terraced, for the components of this substance of our world were not now separate or in groups, but united in one compact mass excluding us entirely from the earth, and rendering us for the time recognised and naturalised habitants of the sky. While in this station any apprehensions that might have been entertained when the hard earth was in night were dissipated, and one folt as though the laws of gravitation were suspended on our behalf, and that in this world above all was rest and peace. The woolly floor beneath looked soft and yielding, and seemed siren-like to invite one to recline on its gentle slopes and find there perpetual repose.

Above our heads the noble roof of anbeclouded sky formed a vast dome to this palace of enchantment, whose gorgeous furnishings were even more splendially impusing than was its wide expanse of othercal space. In the fur east the delicate hoes of a fading rainbow streaked the azure walls. In the west the sun fringed with silver groups of clouds that shoul like larid wool. Below these a range of mountain-clouds, "the Apennines of the sky," rose peak over peak from the lowlands of our fairy country until the summit of the highest was tipped with the rays of the setting sun. Some of these hills were of rugged and rock shape, if words so hard can be justly applied to forms so soft. Others were great hold cones, and some again were radely augled pyramids. Fitting that this glorious view of the novel realms of Nature should be contemplated with awe as well as admiration. Stillness, not indeed appreciave, but grandly imposing, reigning ground. No sound of motion emanated from the softly-burne halleon, not even a creak of the car disturbed the selemn silence. Fain would we have dwell long in such a gorgeous scene: but the weakening rays of that sun which gilded our celestial monutain-tops warned as of the claims of earth, and slowly, as we descended, the mountains seemed to rise above us; the massy expanse beneath divided first, then separated into fleecy groups, again became like filmy shades, and once more the earth burst upon our view. The temperature had varied perceptibly. At the first rising, an everyout was a but incumbrance. A little higher, and in the clouds, the six was chilly, the temperature, Mr. Glishkar informed vs. leing twenty-nies depries lever than in the Cricket Granul wh such latt. No because was did, but at our latte the billion slightly wived for excess, which is the six of the contract o

## THE DESCRIPT.

Learnsido Station was on our left, and our grappling-iron was awinging so near the earth that Mr. Coxwell was apprehensive lest it should eatch the telegraph wires. Villagers for miles around had watched our flight, and we had frequently heard their cheers. They now rushed towards the descending balloon as if anxious to render assistance. Mr. Coxwell, looking out for a favourable position, thought at first to pass a range of hills right ahead of us; but finding a favourable field nearer at hand, he lowered us quickly, and warned us bow to avoid injury by bumps. In accordance with his directions we cowered down in the car and, holding fast the roses on each side, were ready for the bumps when they should come; and come they did. In avoiding the wires on the North-Eastern Bailway we got out of the pan into the fire, as the phrase goes, and caught the telegraph-wires on a waggon-way that had been quite unchserved. The "Manmoth," impatient of restraint, swayed her immense bulk to and fig. and dragged most monstrously against the resistance of the grannel on the wires. " Brave wires!" said one, and bump went we against the ground. Up for an instant, and then down again with a bump bigger than over, and most vilely stunning in its offects. The huge balloon flapped and tore in front of us, and suddenly carried us right off from our hold. Looking over the edge of the car, it was seen that she had torn up two of the telegraph-posts, and brought them over the hedge into the field of shorn and sheaved corn. Worse than this, an exclamation from Mr. Smith told us that the rope had broken, and that the grapuel was left hanging to the wire. Mr. Smith shouted to the persontry who, like the Britons of old when alarmed at the appearance of Casar, had congregated on the adjacent heights, and requested them to come to our assistance and seize the rope,

They came down fast enough, but, not understanding what was required of them, and being perchases apprehensive feeling errole of firm to the between 3 and not wisten held of them are or rope. Mr. Coward, with a degree of promptitive and energy which proved him to be equal to may shape, applied himself to the wite-respond pulled with night and main. Neverthesian be habit-on held if lower to deep them are not shape the first force. The bright and excessional size-offens, then by regain denging, the our lying an in side, and the monther habiton to being along on a smooth-order hard. Neverthesian to the sixth insking the arting relicioned Mr. Coward, and obelogs the results with the signal straining beneity, while we exceeded in it were bumped, and knocked, and thumped, and so the contract of the sixth order of the sixth o

Inspirite as to are whereboate diriced the intelligence that we were most the village of Fritingies, and that we had once to control on the firm of 18. Newly. The Fritingians make and femals, but all one young Retheral rapidly reads, and rendered all the assistance in their power. The five, II Solve, II S

After the excitement had subsided, Mr. Coxwell, Mr. Ghisher and the reporter found themselves hattess, and each returned house in berrowed plannes. Master Ghisher, who has ascended six times, and thought previous ascents rather tune owing to their freedom from dasper, seemed to reliab the present handing as a sirring change from the monotony of his past experience. The greatest altitude statisfied was about two miles.

1863.—The following is the Report to the British Association, of the five most interesting ascents made by Mr. Glaisher in the course of this year:—

#### OBSERVING AREASOEMENTS

were in principle the same as those of the preceding year, the only alterations made being those necessitated by the use of new instruments.

CHUTHSTANCES OF THE ASSENTS, AND GENERAL OBSERVATIONS.

A.D. 1863.

The ascents were all mada by Mr. Coxwell's large balloon, as in the preceding year,—four from the Crystal Palace, Sydenham, and one from Welyerton,

Acord from the Copied Poless, Merch 3.1—The sky was forwards; the vicin was first the Earl, is greatly associated above the siles and instant collision. We let the early of 40 Pea.  $p_{\rm eff}$  and appearsh with a very leave motion to the height of 10,000 feet; continued above this level for some little time, and then nearly seem notion to the height of 10,000 feet; continued above this level for some little time, and then nearly associated above the level for some little time, and then the view, hought it seemed to be less momentary, we descended [1] naise in a minute; this rejid descent was desceived by particly with and, and for his flar show we heppy properly upon a feet, between 1,000 one for 10,000 feet high; after this was probably and almost continually declined, and reached the earth at  $C \ge 0^{\circ}$ , the decreast being here are containfied in 25 minutes.

The temperature of the sir we  $10^{6}$  as the growth, and the sir was more nearly in a normal state than 1 had exact before zero it; about every recovering radii of the theremoster was been then by recovering in severally, and greater on decording; the departures from these normal recovary conditions in a normal state were very small on this coorsion. The three-presents was just now as in highest point, and  $2^{6}$  can be grown. There had, therefore, the coorsion Therefore the very large of  $2^{6}$  in the point. There had, therefore, not be earth here is defined of  $2^{6}$  during the  $2^{6}$  if we are easy  $2^{6}$  and  $2^{6}$  the growth. There had, therefore, the contribution of  $2^{6}$  during the  $2^{6}$  if we are easy  $2^{6}$  and  $2^{6}$  during the  $2^{6}$  consistent  $2^{6}$  and  $2^{6}$  during the  $2^{6}$  during the

Almost free as this day was from disturbing causes, yet there existed both warm and cold emrents of air.

The temperature of each layer of air was different according to its direction of motion, and there were different currents nest with. Within 2 miles of the earth the wind was East; between 2 and 3 miles high it was directly opposite, via. West; about 3 miles it was N.K.; higher still it changed to the opposite, via. S.W.; and about a miles; including the highest point, it was N.K.; higher still it changed.

On descending at 60 15" we fell into a S.E. current, and moved towards London.

Whan nearly four miles high we traced the smoke from a furnece-chimney moving towards the West; after a time it turned more towards the East, then changed its direction two or three times, and finally followed us on our level.

At the greatest height the sky was of the deepest l'russiae blue; the streets of London could be picked ent as lines, and the squares could easily be seen, having all the appearance of an engineer's plan.

The river would like a serject passing the eye down it, ships below like little beat to beyond the Medway, where they work out, the which cliff of Margain were plainly seen; the exployed Dad and Dever was widthe, but not the Francis costs. The constilies was seen possing down the netthern side of the Hames to Harvish and up to Jamonds, with the same beyond, and call up to Down; the York was sheared by thosis and state. The Brighten was visible, the same beyond, and all up to Down; the York was sheared by thosis and state. The harving control of the same between the same at Window, giving it the appearance of particular side.

At Putney the rippling of the water at its edges was like molten silver, and all the country within these limits was map-like, every field being distinct in the suburbs of London, gradually diminishing in sine as the distance from London increased. Greenwich Park was visible, the Observatory apparently a gray speck. We touched the ground at 6° 30° in a field belonging to Mr. G. Brown, Gaysthorn Hall, Barking Side, Essex.

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Ascent from the Crystal Palers, April 18.—The balleon was partially filled during the avening of April 17, with the view of starting early the following morning. The atmosphere was at this time thick and mistry; the wind on the earth was N.F., but plot-balloon, on attaining a molerate clearation, fall into a morth current; the wind was moving at an estimated velocity of 40 miles an hour, and the ascent was delayed hour after hour in hopes that the upper current would change to N.F.

At 1 to x, when the sky was nearly covered with clouds, and there were occusional pleases of amolitice, the assest was decided upon, although it was evident it could at the cose of long direction, must the visible ables alongs its direction, or we crossed the Channel. Mr. Cowrell, however, did not think it predict to attempt the latter visitors other and peopla transgenesses. While the descending this, the rope, or early connecting-link with the earth, brake, and at 1 1 1 7 we started very nacreenessionsly, the bulloon taking a borri. Mr. Crawell was purely just dower the side of the care, and 1 was there as money and interment, and unfortunally both bushful and and hepsatrik hypometers were toolen. Withink in this was were more than 200 feet high; at a 100 feet high, at a thick mist which short connection in a far; the temperature of the air contained at 22 manly, whilst that of the dw-point increased averal degrees; on possing out of the shoel there we temperature vanishely separated, the latter decreasing radiefly; the kyw are of shoe plus, whether a shool on its surface.

At 1°20° we were 10,000 feet high; directly maker as was a so of elevels; the towers of the Crystal Palace were visible, and by those we found we were moving South. That temperature before starting was 61°; it decreased to 32° on revelving the cloud, and continued at this reading whilst in it, than modeledly fell to 22°; we leaving the cloud, and was either less or the same at every successive reading till we reached the height of 20,000 feed, when the lewest temperature was noticed.

On passing above 4 miles the temperature increased to 11% and then decline to 12% at the highest point, yriz. Ayr)00 feet, is 1 broad 125 minutes their straing. When we we sput 4 miles high, and occasionily, 10% could be been be reflect that possibly we might have been zowing amonquichly than we expected, and that it was accounty to descent till we could see the early in personal between the area charged to 22%, and we descented on minist in an accounty to descent till we could see the early in personal than when the miles and 120% of the first who have the form the order. We descended quinkly but less rapidly through the next till, and reached the clusted at 12000 feet from the court of 27%. The when the smooth through the minister 47—mil 100,000 feet from the south—1 may be with my interestent when I hand 10% Curvell exclusion, "What's that?"—but cought single, "Though finds." I looked over the area and the seasoned in the saiders. Mr. Curvell against clustering with the court of the court

Newharen, very tear the say; last the halloon, by the very free use of the valve-line, was so crippled that it did not more afterwards. Nearly all the nativusness were broken; and, to my great regard, there very delicate and beautiful thermosotors, specially sent to me for these observations by M. A. d'Abboile, ware broken.

Acont from the North-Hatters Dallony Which at Bladvirus, Java 25 — In this ascent the Directors of the North-

Ascent from the North-Western Raileny Works at Waterston, June 26.—In this ascent the Directors of the North-Western Railway provided the gas, and gave every facility to Members of the Committee of the British Association and their freezeds to be present.

The go-enterior at Welvertee are too small to held goe enough to fill the lablow, it was therefore partially instead the night before, and remained out a high without being discusced by the nightness wind, it is coming of the source was also calle, the key was of a sleep thin, implying the presence of the titude vapoor, the atmotes the contract was also calle, the key was of a sleep thin, implying the presence of the titude vapoor, the atmotes to the piece soon all this time after the experients in from London should arrive, or as a little star root or, and the completion of the filling was convolved designed, the extraordinary flacesors of the morning promising its completion in a short time. Bettern 11 and 12 civicked all these freewands betternstances taking it; the sky becomes overed with brillers, was of them of a storney abstractive; the wind tree and live strengly, the bullows haveled a great with collect, was of them of a storney abstractive; the wind tree and live strengly, the bullows haveled a great with the contractive of the contractive and the strength of the bullows haveled a great by 1 civicks. The wind was momentally interesting, and it because every desimiles to be sure, but he possible to

The greatest difficulty was experienced in fixing the instruments, which would have been broken but for

Mr. Negretti, who had come from London to assist me, and who protected them even at the hazard of being hert by the violent awaying of the bulleon, and the increasest striking of the car epon the ground, notwithstanding the united excrimes of many men to hold it.

At the time of leaving, the spring catch was jummed so tight by the pressure of the wind that it would not act and we were left free by the simultaneous yielding of the men, and had to part instantly with ballast to avoid striking adjacent buildings.

If was "a fair t" but, where we left the outh, with a strong W.S.W. wind. The temperature of  $\mathcal{O}'$ , representing a most partial of entities to we now food for high plant carbonal a cloud with its neparature of  $\mathcal{O}'$ , representing a most partial feeling of soil, particularly Mr. Carwell, when at the measure of leaving was now-based from his great carriers, and oring to be analogist plant the plant plant of the size of the variable, half be white any arter. Carbonal,  $\mathcal{O}_{i}$  and not provided with the plant  $\mathcal{O}_{i}$  and the provided of the plant  $\mathcal{O}_{i}$  and  $\mathcal{O}_{i}$  and

At 15000 feet we were still in fog, but it was not so wetting; at 16,000 feet we entered a dry fog; at 17,000 feet saw faint steams of the sun and heard a train. We were now about 3 miles high; at this time we were not in cloud, but clouds were below us; others on our level at a distance, and yet more above us. We leoked with astonishment et each other, and said as we were rising steadily, we surely must soon pass through them. At 17,500 feet we were again enveloped in fog, which became wetting at 18,500 feet; we left this cloud below at 19,600 feet. At 20,000 feet the san was just visible. We were now approaching 4 miles high: donse clouds were still above us; for a space of 2000 to 3000 feet we met with no fog, but on passing above 4 miles our ettention was first attracted to a dark mass of cloud, and then to another on our level; both these clouds had frieged edges; they were both nimbi. Without the elightest doubt both these dark clouds were regular rainclouds. Whilst looking at them we again lost sight of everything, being enveloped in for whilst passing unwards through 1000 feet. At 22,000 feet we again emerged, and were above clouds on passing above 23,000 feet. At 6 minutes to 2 o'clock we heard a railway train; the temperature here was 18'. I wished still to ascend, to find the limits of this vapour; but Mr. Coxwell said, "We are too short of sand, I cannot go higher; we must not even stop here." I was therefore most reluctantly compelled to abandon the wish, and looked searchingly around. At this highest point, in close proximity to us, were min-clouds; below us dense fog. I was again reminded that we must not stee. With a hasty clarge everywhere, above, below, around, I saw the sky nearly covered with dark clouds of a stratus character, with cirri still higher, and smell spaces of blee sky between them: the blue was not the blue of 4 or 5 miles high, as I had always before seen it, but a faint blue, as seen from the earth when the air is charged with moisture.

Hattly glassing ever the whole zeros, there were no extensive, fine, or picturesque views, as in male situation I had always before seet. The visible area was limited, by a stronger was marky, the clocks were confused, and the aspect very whore all. I cannot avoid expressing the swypted law refer led at the extraordinary power which a distinction libit has indicted, when a few mounter only can be develoted to not down all approximates and all elevansitates, and if not no rapidly glessed they are botf ever. Under such circumstances, covery appraises of the nost trivial latin is aboutly in the sound to become between the fains innor active, and every sense increased in power to ment the exceeding of the case; and when we look lack that the layer of time, and lather dealing.

We then began our downward journey, wondering whether we should meet the same phenomena; soon we were envoloped in fog, but passed below it when at 22,000 feet, and saw the sum faintly. At 29,000 feet we were in a westing fog, and passed beneath it at 19,500 feet, experiencing great chilliness; fog was these above and

2 1. 2

below. I now wished to ascend into the fog again, to check the occurscy of my readings as to its temperature, and the reality of the chill we had felt, so we reascended. The temperature rose to its previous reading, and fell again on descending. From the same level, for a thousand feet, we passed down through a thick atmosphere, but not in cloud or fog. Looking below, all was dark and distorted; looking upwards, not much better. At the height of 18,000 feet we were again in fog. At 3 miles high we were still in f.g. and on passing just below 3 miles, rain fell pattering on the balloon. This was 1 mile higher than we experienced rain on the ascent, and it was much heavier. On passing below 14,000 we extered a suver-stern, and for a space of nearly 5000 feet we passed through a beautiful scene. There were no flakes in the air; the snow was entirely composed of spicular of ice, of cross spiculæ at angles of 60° and 96°, and an innumerable number of snow-crystals, small in size but distinct, and of well-known forms, easily recognisable as they fell and remained on the coat. This unexpected circumstance of snow on a summer afternoon was all that was needed on this occasion to complete the experience of extreme heat of animmer with the cold of winter within the range of a few hours. On passing below the snow, which we did when about 10,000 feet from the earth, we entered a murky atmosphere, which continued till we reached the ground; indeed so thick, misty, and marky was the lower atmosphere, that although we passed nearly over Ely Cathedral, and not far from it, we were unable to see it. When 5(00) feet high we were without said, and became simply a falling body, checked by the dexterity of Mr. Coxwell in throwing the lower part of the balloon into the shape of a parachute,

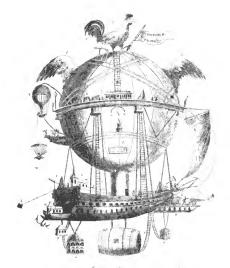
The place of descent was in a field on the berders of the counties of Cambridge and Norfolk, 20 miles from the month of the Wash, and 8 miles from Ely.

Accord from the Crystal Palace, Ady 11.—This ascent was introded to have been one of extreme heighty and the promise of records in this respect was abled our still must reliate of starting, any plot-fellows had promet newly does ext, and indicated that are course would have been towards Decembility, but we doubtful is the course a labellow will have that no certainty can be fell titll the hallow has actually fell. However, on this excends plate-balloons, though at first mering towards the work, now next with a north wink, and work over, the third have elementary the starting to accord for miles was adminsted, and we restored to nextrain, for it are possible, the histones of the stratum induceded by the east wink, to profit by the knowledge, and have as long a former away accord.

At the time of leaving ( $\ell \otimes T \times A_k$ ), the sky was a well-presently with a being in the same of the

We then acceeded to 6000 feet, again to repeat the observations I had made, and found that the temperature in the half-hour had declined 2" or 3". At this time (o" 50") cirri and cirrostratus were very much higher than ourselves, and we saw the count near Brighton.

A constitution had been hadd white at that height with the view of crossing over to Pirace; but our prepares being or dow, and the chromateness on beginning success, we can other our with the view of again falling into the cast wind, apoposing it still to be provident. We use the serial wind again at about 2000 feet, on the cast wind at exactly the same height, viz. 2000 feet, at which we had it in a severaling. We descreaded to windle 1000 feet of the cartie, and were now. Working, at about a mile from the cent; we then accessed to 2700 feet— 1000 feet of the cartie, and were now. Working, at about a mile from the cent; we then accessed to 2700 feet which we have the contract of the carties of the contract of the contract of the carties of the contract o



LA MOSERIA. Son from amen Section and decouveres par le profession . Coloresson La Minore on Cafada action darch Popper Roberton on more beautiful description

journeyed at hights varying from 800 to 1000 feet—villagers frequently sheating to as to come down, and now and then asswering our questions as to the locality to were in. The cheering rey of children was frequently local above other sounds. Green, eaching and frightened, scattled of to their farms. Pleasants crowed as they were going to root; and as we approached the end of our journey, a pack of hounds bayed in the wildest state of excitement at the hallow.

Thus journeying, all motion accound transferred to the landscape itself, which appeared when looking one yet to be rising and coming towerls us, and when looking the other shiring and receiling from us. It was sharmingly varied with parks, maneious, white reads, and, in fact, all the constituents of a rural scene of extremely beautiful character. The place of elecent was Goodwood Park, the sent of the Duke of Richmond.

Acost from the Ceptad Balon, July 21—The weather on this day was bul, the sky overesst and risky, Albudapk in every respect a thoroughly bul day, it as well stilled to investigate, if problish, some points concerning the formation of rais in the closels these-leves; to determine why a much larger amount of rais in collected in a pages seen the author of the earth than is one piles of an elevation in the same leadily; whether the irran is a first instrumed completely, or if rost, to what attent; to discover the regulating causes of a raisfull sometimes occurring in large drops, at other in maintar particles.

So long back as the years 1421 and 1441 I and neary experiments in order to accretize they arguest affirments be values on a final to a list the water collected a toler mattion as compared with at collected at higher. The experiments which joided the best results were those in relation to temperature. I always found that when the rais was warm, with respect to the temperature to the out at the time, no difference calculate and that when the rais was warm, with respect to the temperature of the high out of the results of the results are considerable difference always action. From this elementaries it would appear probable that the differences in the quantities of min collected at different beights in overing (at least in part) to the great confinement on the varyour in the veryon time.

It was also desirable to confirm, or otherwise, Mr. Green's deductions; this gentleman believing that, whenever a fall of rain happens from an overcast sky, there will invariably be found to exist another stratum of cloud at a certain elevation above the first. We left the earth at 45 5.2" r.N., and in 10 seconds had ascended into the mist; in 20 seconds to a level with the clouds, but not through them. At the height of 1200 feet we passed out of this rain, and overlooked a range of surrounding clonds, so dazzlingly white that it was with difficulty I could read the instruments furnished with ivory scales. At the height of 2800 feet we emerged from clouds, and saw a stratum of darker cloud above; we then descended to 800 feet over the West India Docks, and saw rain falling heavily upon the carth. None was falling upon the balloon; that which we saw, therefore, had its origin within 800 feet of the ground; we ascended again, and this time passed upwards through fog 1400 feet in thickness. At 3300 feet we passed out of cloud, and again saw the dark stratum at a distance above; clouds obscured the earth below. On descending, at 2700 feet we entered a dry fog, but it became wetting 100 feet lower down. After passing through 600 feet the clouds became more and more wetting, and below were intensely black. At 3º 29" we were about 700 feet high, or about 500 feet above Epping Forest, and heard the noise of the rain pattering upon the trees. Again we seconded to 2000 feet, and then descended, passing into squalls of min and wind at the height of 500 feet, with rain-drops increasing in size as we descended, till they were as large as a fourpenny-piece, those on reaching the ground being of the same size as when we left it. On descending we found rein had been falling heavily all the time we were in the sir. [Mr. Green's deduction is therefore confirmed by this experiment.]

The following description of "Le Géant" of M. Nadar, is extracted from 'L'Aéronaute,' a periodical started by him, to promote the interests of aerial navigation. His balloon was for some time exhibited at the Crystal Palae:—

#### THE GLANT BALLOON.

Several persons who do not follow from day to day the columns of the navapapers, have saked me, "Bet why do you make a balloon, no who offirm with next hosensuces that the first couldition, in order to more conin the air, is to suppress balloons, and that in order to contend against the air, it is necessary to be heavier, and not lighter than the sir?" To these people I reply, I have profound faith that the screw will be our aerial motor; but I am ignorant of what the experiments of this first motor will cost.

I have no great morit of infinition in suspecting that it will always be necessary to commence with something

--twenty thousand pounds or four hundred thousand pounds!

Now, if I had bettempth sayed of gring and bolding out my hand to the public, to demand a small milities in marber to expension, to make, proting, a machine that of 20° pc of y to the air, the public would not them failed to niter crise of alarm, and those who do not cure to look on, those who cannot see, those who, showe all, hold by their sovereigns, would have cried out in dorson, "This man is certainly a mediana! We were somewhat doubthf and the present, the tree he makes open orderine of it. What I Hos hat the colors in a kin for a million in

He is an importing follow, who makes from of us!" They would have abused me with their tungues, which is norre concensional than nativing the pure-strings; and some, in the greatest burry not to put their hands in their peckets, would have treated use at least, as a thirf.

As I do not like to ask, and as I do not intend to allow any one the possibility of not passing very obliging journates on my account, I said to myself that I would give myself the first million, the first handred thousand frames. If you will, to my dear servey.

And as I had not this million preiodly under my band. I have revolved to procure them for myself by means of a spectral of laws, personalities. I had miss had believe the first dissociation properties treatly these barge than the largest, which shall realise that which has serve been hat a dress in the American tensor that the largest than the largest, which shall realise that which has serve been hat a dress in the American man insignificant secure. In order to add effects the interest of the spectrals—which I Leicher Merichnei, without fixer of being belief, shall be the most beautiful spectres which is hese ever been given to man to conceptlant—it shall allopson maker his menter balloon at multiplication extensive the season of pass pectres by districts, instead of losing this excess, which has hitherts been the case, which will pursual my abulinous to understand such takes the case, which will pursual my abulinous to understand which will pursual my shallow to the contract balloon at multiplication, instead of losing this excess, which has hitherts been the case, which will pursual my abulinous to medicate the visible language, instead of present and allow of such insteass interest. I shall endower to fermian payelf the two humsled thousand finess nervousiff for the contraction of any hallon; and the said lathous finished, and purposes an excessive or the individual to all called other the first fines becoming for the contraction of any pathic assents and successive sublitations at Paris, Landon, Branch, Vienn, Index, Berlin, New York, and everywhere. I have believed had hat I all and often the first fines becoming for the construction of our plant.

The balloon can only therefore be, and is only, but the prolegue; the true piece is the aeromotive, which supersedes the balloon.

I have set to work immediately, and after many difficulties and versations, which I have kept to myself alone this hour, I have necessed in establishing my ablace, in founding at the sames time this journal—their incidinguanable Monters to the serial automotive; and in laying the basis of that which shall be, perhaps, the greatest financial operation of the age.

However, if I demand nothing of any one, I had about me brave and good friends, who, having at four, diseased not, finding by accepting any list, I shoulp it was a showhest, and by alling now with all their good. I wish, I report, to relate all this when our more pressing husiness shall be finished. It is by this active intervention of those about me, who have been pleased to render me the effective which Takes for them, that I have been able to clean from the Administration, without even, so to speak, having had to ask for it, the place reconsury for my first securits.

This little explanation finished, I arrive at the description of our "Giant."

The "Giant" is composed-

 Of two balloons, one within the other, for greater strength, of white allk of the first quality, and absolutely identical. Each of these balloons has 118 gores of forty-five metres in length, which gives a

• The first idea of a compensator belongs to Louis Gohad. I have limited myself to making the practice of it more easy, by placing the matrix of the vertical, which he disposed hazrally against the large balloon, and whose non-natomatic management was beene less simple.

circumference of ninety metres (one metre equal to 39 \( \text{r}\_{e}^{\text{N}} \) English lackes). These gores are entirely hand-sewn, with a double seam.

ith a double seam.

2. Of a small balloon, called compensator, placed beneath the first double balloon, to receive the excess of

gas, and which gauges only 100 metres (3531 cubis feet).

The "Giant" can and ought to raise a weight of 90 quintals (4\frac{1}{2}\) tons).

The total beight of the entire machina attains, if it does not exceed, 60 metres (196 ft.), 14 metres (45 ft.) loss than the towers of Nötre Dame,

Its construction employed 20,000 metres (22,000 vds.) of silk, at about 5s, 4d, per vard,

The car has two floors (ground-floor and platforms). Its height and breadth are 2 metres 20 centimetres by 4 metres. These dimensions, which are somewhat rigorous in face of the weight the aerostat ought to carry up,



CAR OF NADAR'S BALLOON.

have been imposed by the necessities of the return. The car had to be reduced to the strict proportions of the gauge of a railway, so as to be able to be transported by rail. The hand-rails of the platform fold down upon it, in the return.

It is constructed of ash-branches, ratans, and osiers, traversed beneath and on its walls by twenty cubles, interlacing their fabrie, which are attached to the boop.

4. If it carried upon two nate and four wheels, which are fitted on after the descent, which gives na every facility of returning, repenying a sleecent for from the entires of population. Cares disposed to set as springs are placed nodermath and round the middle to pratect the or from conceniums. Books instartal borys, an intensess gradual in competences, of instals induscribes, denduck it against every possible money. In proceedings of the concentration of the contribution of t

The four other divisions are intended for—1, provisions: 2, a lavatory; 3, photography; \* 4, printing press. We shall take up with us Reguessat's small lithegraphic press, which will be more than sufficient for printing off the harlinged account of our expeditions, to distribute above localities which we passe which we

Regarding this, an English company a morth agree-our neighborns are narvellone in not losing timeappreciating the banks which the sight of a ballons action in every inhabited place, and judging rightly that papers would never be better received and more greedily read than those thrown overhoard by mu—despatched to me a messager, to propose to me to accept in like manner commercial prospectuses. We shall never have too mack moonly for the construction of our first aerosorier. In Dava accepted and made a contract.

To return to the description of our "Giant". It is useless to add that we have underwormed to frequent to thing calculated to assure the wellbeing and security of our examinons—provisions of all serts, instructions for scientific observations, games, means of defence in case of descent among an inhospitable people, and even to two cares of examinous significant from Lifers.

It only remains for me to return my thanks to my numerous fellow-labourers of every rank, whose extreme willingness to sid me throughout has alone enabled neo to arrive at the end of this great work in the time I thought I should be able to do so.

Superintendence of Wor	ks			MM. Louis & Jules Godard.
Geometrical Draughts				MM. Tisseron & Abeillon.
Cutting and Sowing		 		Mme. Louis Godard, superintendent
Car and Wickerwork		 		M. Fortuné.
Hoopwork				M. Gnillaud.
Joinery, Valve				M. Laurain.
Varnish				M. Lelen.
India-rubber and Beddi	log .			M. Guibal.
Barometers				MM. Hichard & Breguet.
Optical Instruments				M. Richebourg.
Rifles				M. Devismes,
Decorations and Equipme	ont	 		M. Godillot (Delessert & Co.)

When I shall have thanked after these, which I meet heartily do, the hamiles weekpople, 200 wmeen and mee, for their moders and indicational doct and mid-like thorse othery thing high forms the "like permitted use to add, to lower nothing behind, that the firm of Foel and Chube know kindly presented as with all their problem, and that now kindly shall; if that is possible, the Director of the first Consensate and study seet to six backet of wine of the first quality,—and even Straidin, a supply of confectionary enough for their booking-redood.

I have finished-Lar Go!

NADAB,

The first ascent of Nadar's "Géant" was made on the 4th October, from the Champ de Mars:—

The whole plain was filled by spectators, anxious to see the departure of the seronant and his compunious.

The balloon, when inflated, was exactly fourteen yards lower than the tower of Nôtre Dame.

• We say not about to interest corrective, as one may well suppose, in making perturbs in the sar. The behalon "Is Grant" will be enablyed in turbour which of secondary histography, for which I was been also as the same of the property of the property

binnel'il ne chimina priority. The dubes of any patents press it, no the one hand; and herides, I have neparl disbateds, in priori dimenderivable materials, results in simple positive upon gions, it is true; above the valley of the Biover, at the begivable of the violet in 1506. If I have not made any chain against the new-trien combined in the contract of the contrac Of course, such an nunsual event was calculated to have its records in the various European journals. We cannot quote the whole of the reports, valuable as they are from having been written by eyewitnesses, and will limit courselves to a few of the horse important.

'Galignani' writes thus:-

"The deputies of this Levishan of the sign regions attracted immesses crowds to the Changle Man, partectly afformace, Camidating that the average externed instructs are space was filled to anticonies, on the west conficiently and trans reasons with the conficients, and the surface of the su

"We were unbre suprised at the silence of the public, cooldering the very numbable fast in accessation the assessment processing the contract and the cooldering countries. There were fine to persons in the cont, or affect collisis—M. Access the Collection and Julie Collection, and Julie Collection, and Julie Collection, and the Collection and Julie Collection, and the Collection and the Col

"Interesting details of the ascent of the Nadar balloon, said to have been narrated by Prince Wittgenstein, are given by the 'France.' The most extraordinary is, that at half-past eight, when the balloon attained the height of 1500 metres, the aeronants saw the sun, which had set for the earth below upwards of two hours before. The effect of the light upon the belloon is described as something marvellous, and as having thrown the travellers into a sort of cestasy. Although they met with no rain, their clothes were all dripping wet from the mist which they passed through. The descent was more perilons than at first reported. The ear drugged on its side for nearly a mile, and the passengers took refage in the ropes, to which they clang. Several were considerably bruisedthough, as before stated, no one statuted any very serious injury. Everybody behaved well. Nadar, visibly measy about his fair charge, the young Princess do la Tour d'Auvergne, was told by her to attend to his duty as captain. 'Every one at his post,' said she, 'I will keep to mine.' Notwithstanding all the shaking which the car underwent, the thirty-seven bottles of wine provided for the journey were all found unbroken, and they were most joyously broached when the party got on terra firms. The rifles, the crockery, as well as a cake and thirteen ices, presented to Nadar hy Sirandin, of the Ruo de la Paix, were all uninjured. When the descent was offected, the lights and the speaking-trumpets soon attracted a number of peasants, who brought earls and helped the party to the village of Barry, where most of them passed the night; but M. Nadar and the Prince de Wittgenstein, with two or three others, came to l'aris by the first train from Meaux. It is said that the descent was resolved upon in consequence of the advice of the brothers Godard, and contrary to the wish of M. Nadar, who, as captain, had made overy one of his companions sign an agreement to act upon his orders, even though the vote should be unanimously against him. He, however, yielded his opinion, in deference to that of these experienced aeronauts,

- A truly extraordinary statement is, that they fancied the wind was blowing them to the sea, and certain destruction, whereas they were going due cast, with no sea at all before them nearer than the Caspian.
- "There was great disappointment in the receipts at the Champ de Mara, which are said to have realized by 27,000°4, whereas 10,000°6 I dud been esteaded upon. The pupers say that the public broke deem the barriers and got in few solding, instead of paying their frame. It is quite certain that at the moment of the ascent there could not have been less than 50,000 people on the Champ de Mara, and on the terraces and heights around
- listore preceding further, we may just quote the rules laid down by M. Nadar for his first ascent. Circumstances have not allowed them to be carried out to their full extent. The rules have not yet appeared in any English journal. We extract them from the 'Moniteon,' which published on the day after the ascent a very clever article from the res of M. Gustave Choudin.
- "1. Every traveller on board the 'Géant' must take, before mounting, knowledge of the present rules, and suggest hisself upon his honour to respect them and to make them respected, both in the letter and in the spirit. He averyte and will obey this obligation until the descent.
- "2. From the departure to the return there shall be only one command, that of the captain. That command shall be absolute.
- "3. As legal penalty cannot be enforced, the captain, having the responsibility of the lives of the passengers beerloss show, on without appeal, all all circumstances the means of sawring the accretion of his orders with the aid of all under him. The captain can, in certain cases, take the advice of the crew, but his own authority is decisive.
  - " 4. Every passenger declares, at the time of ascending, that he carries with him no inflammable materials.
- "5. Every passenger accepts, by his simple presence on board, his entire part and perfect co-operation in all manuscurves, and submits binself to all the necessities of the service; above all, to the command of the captain. On leading, he must not qu'th the balloon without permission duly acquired.
  - "6. Silence must be absolutely observed when ordered by the captain.
- "7. Victuals and liquors carried up by the travellers asset be deposited in the common canteen, of which the captain alone has the key, and who regulates the distribution thereof. Passengers have no claim to victuals and liquors except when on board.
- "8. The duration of the journey is not limited. The captain alone decides the limitation; the same judgment decides, without appeal, the putting down of one or more travellers in the course of the voyage.
  - "9, All gambling is expressly prohibited,

there must have been four times that number."

- "10. It is absolutely forbidden to any traveller to throw overboard ballast or any packet whatever.
- "11. No passenger can carry up with him laggage axceeding 30 lbs. in weight, and occupying more apace than an ordinary travelling bag.

  "12. Except in very rare cases, of which the captain alone shall be judge, it is absolutely forbidden to smoke
  - on board, or on land within the vicinity of the balloon."

    Of course, various opinions have been expressed by the Eoglish journals on this aerial voyage. The interest
  - in Eighnit was graved. These were amplicant in the English mind that the Yareth varieties could not rival the armman of English. There were applicate of diameter. The ascent was made, however, but under special discharatage, as many of the details of the project were new, and the public has not yet been made sequinated with all the ingestions derives of  $\Omega$ . Nature. There was sympathly for the aremonal, but in the English journal, which his matters of science did not represent the English journal, which his matters of science did not represent the English journal, which his matters of science and the contract of the english properties of the english and the completely as in matters of publics, whereas judgest has been open reasonal many of them. Severa and joes now not suprement.

"Sunt verbs et veces, preterenque nihil."

We approve, however, of the tone in which the 'Morning Post' writes :-

"The Champ de Man yesterlay was occupied by a crowd of not loss than 10,000 pressas, of all classes of society, to witness the ascent of the largest balloon sver yet constructed, with the nevelty of a small square house instead of the ordinary car. The neverpapers have for some time contained accounts of the 'Giant', and acientific papers have been read on the 'Giant' youver to assigne the air, and carry a heavier weight than has hithert, sailed through the cloud world. The public, therefore, were worked up to an excicel pitch; and as the first "tip" of the hallom toke place on Sunday, a most namerous such of specificters not only covered the limeness appear of the milliary verive-ground, but thickeed the house-top, and network over grown by the bulk may be proposed to the Changle Mars. The venther was favourable, without rain, the oly being covered, so that the spirmed type of the thousands could gas at the infinitely institutes without incrementation. The 'Ginst' is used of yellowish which as their intercentations. The 'Ginst' is used of yellowish which is instituty parts in stands of yellowish which is instituty parts in change of 20,000 gatters of \$20.00 km street of \$20.00

"Body is a first and sound allow yield and one, good properties of the six streament, there exists for report, and provides and large open constructors. Under, round the founds, round the founds, were grapated, whereas, and foreign sixty, builded two specific primages, and provides. The wheels were intuited to be part to the or after a lighting, in order to covery it had with horses. It acts, one might suppose that the revealment special to discuss it in a most to covery it had with horses. It acts, one might suppose that the revealment special contraction of the state o

"The travellers on this extraordinary concion ought to appear, pethops, amongst the "departures" in the findicionals obstimes, of the Meeting Pacif, We may, herefore, apt than it flowing but the following solidity and goody left this court (destiny valueson) :—M. Nather, capacity MM. Louis and Julies Golden, Mirred, Baller Scholler, Marchael (marchy pethods) and pacify a large solid pacific and goody and the control of the court and the court of the court and the court of the court and the court of the cour

"The inflammable nature of this gas rendered it a most dangerous experiment, and it was not antil the general employment of the ordinary illuminating gas that acronauts ventured on the airy voyages which are now so common. Garnerin was the first person who made an aerial voyage in London, on which occasion the whole population poured out to wonder at this remarkable event. It has been said that his Majesty George III was holding a Cabinet Council at St. James's, when the attention of his advisors was directed to the movements of a balloon. His Majesty went to the window, observing that he knew the people in France often made themselves fools, but he thought his subjects in England were wiser than to attempt or patronise such hazardous experiments. The brothers Garmerin were the first who descended in a parachete. Eliza Garmerin, daughter of the seronsot, was the first female who ventured to quit the ball-on in the frail parachote, and afterwards performed the periloss experiment no less than thirty-nine times. It has been supposed that the first time a balloon was employed to assist in the art of war was in the late campaign in Italy, when the Emperor Napoleon 111, availed himself of it for surveying purposes. His great nucle, however, considered that the balloon might be rendered useful; and it had been employed at the lattle of Fleurs to watch the movements of the enemy. Pilâtre de Rozier attempted to cross the Channel in 1785, but he unfortunately had made use of hydrogen gas, which took fire, the balloon exploding, and he was dashed to the earth and killed upon the spot. A monument has been arected to his memory at Boulogue. The famous Nassau bulloon made, some years since, a sall across the Channel, and was the wonder of the day, the aerial voyage lasting many hours. A journal has appeared in Paris called 'L'Aeronaute,' which, in future, is to record the latest scientific intelligence from the high heavens. In fact, the 'Giant' promises to inaugurate a new era in the art of navigating the air."

Nadar, on his return to Paris, wrote briefly thus :-

"Puris, Oct. 3.

o'clock, the 'Giant' was compelled to descend near the Barry Marsh, two leagues from Meaux, after three violent shocks, the last of which completely turned overything in the car topsyturyy, and it descended on its side. The insture of our valve-pipe rope, while travelling by night, forced us to throw out our anchors. One of the proags of the first anchor having broken, the principal anchor fortunately took hold of the ground. We were able to let out the gas, notwithstanding the violence of the wind, and the car was set up at half-past one in the morning. Some slight contagions and a concession of the knee of one of the passengers—that is our receipt in full. It is not too dear.

"Here, as briefly as possible, is the account which you asked me to send. Yesterday evening, at nine

"(Signed)

This short account was followed afterwards by a more detailed statement, which we give:-

"Allow me to add some explanatory details which appear to me to be necessary. My principal anxiety was, whether the double covering of silk, supported by the network, would be strong enough to bear the terrible pressure of 6008 metres of gas. There had never before been any experiment made in these proportions, except that of the famous 'City of New York,' which hurst like a bomb before it went up. I do not speak of other secondary difficulties in an operation of such considerable proportions and of such a novel character, Those multiplied difficulties prevented us from starting until five instead of four, and then without having time to attach the compensating balloon, which would have required another hour. For some of the spectators it is, perhaps, well to add, that the interest of the spectacle did not less much, as they would only have seen the balloon look a little longer, and not quite filled. The compensating balloon is, in fact, only a prolongation of the other, and would fill when the gas in the larger one dilated. The name it bears sufficiently shows the purpose for which it was intended. I have been informed that some of the spectators calculated on seeing the balloon steered; this is an additional proof that the same thing cannot be too often repeated.

" It nevertheless appeared to me that all the journals had at great length explained that the theory of the steering of balloons was an absurdity; that to contend against the air it was necessary to decide on being like a bird, heavier, and not lighter than the air; that the screw appeared to solve the problem; that, in order to make the costly experiment of a first acromotive in practical preportions. I had resolved to precure the necessary resources, not by a public subscription, but by a spectacle interesting enough to secure the desired result; that I had, as the first subscriber to the screw which will conduct us in the air, incurred at my own risk and peril the expense of this gigantic balloon, which will, I hope, be the last; that this balloon is not, therefore, an object, but a means; not the piece, but the prelogue.

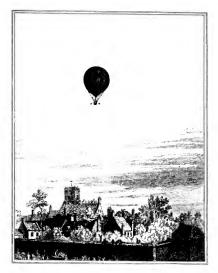
" I am willing, for the benefit of my beloved acrew, to pledge myself to risk my bones as many times as may be necessary, but as to steering balloons, never! Many persons were not able to enter the ground for want of a sufficient number of paying-places. Those persons might have secured tickets, which were to be had two days before all over Paris. This does not prevent me from offering them my excuses, begging their indulgence for an unskilled director of spectacles, who is the first to suffer from their non-admission. Some of the spectators. I am told, also complain that the reserved enclosure had no seats provided. I am not aware that chairs were over placed in the Champ do Mars for any public exhibition, any more than at Long-bangs or at Vincennes. I thought I was doing a great deal in placing 2000 metres of seats for the ladies who first entered. The posting-bills and tickets did not promise that. In order to satisfy every one, I shall endeavour to have seats for the second ascent, which will take place on the 18th inst.

" Namen."

Nothing dannied by the accident already explained, M. Nadar made another ascent on the 18th of October. Again the ascent was made from the Champ de Mars; the Emperor and the young King of Greece being present, The Emperor manifested a special interest in the enterprise, and remained on the ground until the bulloon had left term firms and scared into the skies.

The first nows that reached England was a telegram to the following effect, dated Paris, 18 October, 6.45 r.m.:-"Monaicur Nadar made a most successful ascent in his giant balloon at five o'clock, from the Champ do

Mars. The Emperor, the King of Greece, and a wast crowd witnessed the ascent. The Champ de Mars was kept by the military. Nine ladies and gentlemen ascended in the belloon, but it first mode a short ascension with thirty-two persons,"



The transportant at the Deliverer Servey Discovered have Smithsumpton make the superintendence of tops "Hildonia have R.E. Gel St. H. Amore R.E. F.R.S. & Discovered

The excitement of the Ferrisian public, of course, was great, and all the representatives of the Ferrels and oringin journals were present to witness what was passing, and to transmit their impressions to their respective papers. To quote all that was written to English and Continental newspapers would be superfuseou. We give, then, a few of those which resheld London on the Tuesday following, and which were road with availity by all classes of the community. We take, to begin with, the "Dig! Tedgraph," but dates—

"Paris, Sunday Nigh

"M. Neles mode his second account to-day at 5 rs. 1 field yea has time that all Paris was present. To-day Paris small here invited all its country consists as the bast degree, and they must all have sneepled the irritation. I have now seen been so denou, a mass of people as were convoided round the Chang de Mars. The Empurer was present for round by two hears before the balloon stated. H. saw riversi in simple open carrings and form, and an abid-de-county in the carrings, and an experty seel two cattribure with fit. When he entered the Chang de Man he sorbered the partition to with their bross, and entered depoint at ford-power. He was to-direct strength well, and was more warmly received than I have vere seen him by his own midjents. The Empurer balls tong conversation with M. Matte, and extended excepting, from the new for the trope which theld her medicine to earthly

"The 'tital' or' contract.' Sallows was the Goldlitt, used in the Isalics company, and the Emperor waveleds with every natural interest over of securit is challegaring; in mostly this simults callone, which rea high enough to enable maps of any compty position to be takes without levelage belongaries. Just as the Emperor had finished his inspection survived by many fixing of the Greeks, and be also examined everybing, and cross united the next after it was attached to the galaxies given in the proper of the contract of t

It was only natural, that after the balloon had left the Champ de Mara, and disappeared in the shocker of sight, that much anxiety whould be fit in a to the convent he laborat and lie brilge rightly and balloon. Of course, percelution was life. Some tabled of England; some of Harver, or even Shlerin. Impriries were made at the kears of H. Saking, in the course of the fallowing day, by partice interted in the project means of the sharper of Harver and the state of H. Saking, in the course of the fallowing day, by partice interted in the project means of the sharper of the state of the sharper of the

The greatest uncertainty existed, and anxiety prevailed until the afternoon of Monday, when a telegram was received that a ball-past eight on the previous evening Nadaw was over Compilegon, seventy-eight miles from Paris. It sent a message down, "All gorse well," and continued his journey towards the north, having descended near the ground to speak.

Nothing mere was heard of the balloon until a second telegram was received in Poris, sating that Node? Giant Balloon passed over Expandines, on the Belgian frontier, at midnight en Senday. The secretat was mering not far from the ground, and the custom's effects called out to know if the serial voyagers had anything on which deby should be paid! Ne ettention was paid to the question, and the balloon kept on its course towards the German Sentier.

Meanwhile curious Fariainas flexeds to M. Nadar's home to ascertain if any farther tidings had been received. It was beeped be also not foundered in the German Occup; it was the first-eight home since this designman navigation had commenced, and so long a sojourn in the clouds was believed to be unprecedented in acrostatic sensals.

At last came a telegram from Bremen, dated the 21st:-

"Nadar's balloon descended near Eystrup, in Hesevor. There were nine persons in it, of whom three were seriously and two slightly injured."

Other telegrams were published in Peris shortly afterwards, and also circulated in London, where the interest taken in Nadar's accent was as great as that in Paris. Here follow two of them:-

" Paris, Oct. 21.

"We descended near Nienburg, in Hanover, et noon on Monday. Our balloon was dragged for several

hours, the enchers having been broken. St. Felix, my wife, and I, are rather seriously hurt; the others are better. We own our lives to the courage of Jules Godard. More detailed news to-marrow."

"Hanover, Oct. 21.

"The wounded persons from M. Nadar's halloon have been conveyed to this city, and placed subser the core of the French Legistim. The King of Hancore such an side-de-camp in ingainst after their wants. M. Si. Felix has asstaired a fracture of the left humerus, boides contains on the face. M. Nadar has both legi dislocated. Madans Nadar has notationed a compression of the thoras and containsion on the leg."

That an accident had bappened was mainful from the tener of these various talegrams, and the greatest marrier permitted in these a faller account of the varyon of Nadac and his comparison, and the nature of the injurious they vanished. At this memorit English criminity was extreeded by English sympoly. It had been stated that two models ones had been summed from Paris to strett the vorsuled, and that Pr. Richard had settingly for far linearces, taking with him the young soo of Nadac. Dr. Edshad took the table-perpit to depart to serve as a proport. It was stand that the restriction would probably have all probable [1] falls included had been to recope. It is shift, edited up by the activated and earl a had in the all with a hatched, so a to allow the gas to couple. By a shift had ringed to far from one ones of the hallow, which was making bound at from forty to compe. By a shift had restricted that the shift of the state of the shift of the

Details at last began to arrive of the ascent and descent, although as yet they did not enter much into particulars. The "Northern Gazette" of Hanover published the following latter:—

Sienhure, Oct. 19.

"At a quarter-past nine this morning a large balloon passed over this town, coming from the left bank of the Weser, with the wind at south-west. The lower part of it appeared to be emptied of its gas, and was moving about within the network which surrounded it. It passed at a height very little above the houses, and the persona who were visible in the car appeared to have the intention of descending, for when the balloon passed over the milway a grapuel was thrown out, but did not quite reach the ground, and the workmen on the line who ran to the spot could not succeed in laying hold of it. The balloon then rose and went in the direction of the village of Wedpe, which is surrounded by marshes. Another grapped fell on the roof of a small summer house, but did not find a solid hold, and tore away one of the rafters. The balloon afterwards struck against the house of the watchman of the railway station at Nienhof, and against the telegraphic wires, which nearly turned it over. The car was dragged along the ground for a leacth of time, the persons in it calling for assistance, which could not be given to them, by catching hold of the ropes which hung from the car, the wind being too high. When near Warlpe the balloon rose high enough to pass over the trees and to proceed in the direction of the desert countries of Lichtenmoor and Rollens. Since that time no accounts have been received of the unfortunate persons in the ear. Several ropes fell during the violent plunges which it made, and also two large pieces of iron seeming to be exle-trees, and a speaking-trumpet. Every one asked where did the balloon come from Paris or the Ithine, but as a hat was also found which had been purchased an the Beuleverd Schastopol at Paris, the probability is that the acronants are Parisians."

It is as if we were writing of some great battle, so various and sometimes so conflicting are the seconstands which reached us. This circumstance, however, only proves the great carbonity which was curvy where manifested respecting the balloon, and the great interest taken in lastic. Special reporters were sent by some of the German papers to the spot where the "Giant" had not with the disaster. The editor of the "Westr Zeitung" went himself to Nichteig and published as excent of the wrope, in which there we many interesting design and the properties of the proper

The 'Zeitung für Nord Deutschland' also enters into many curious and minute particulars, and says :-

"The unknown aerial travelline reidently which to descend at Nisaburg, and there set an anchor, which cought the roof the entage of M. Ropp, tature, but not finding hold, weet says with a ruler. We do not know whether the rope of the grapuel, about an leefs in diameter, bash or was cut of, as probably was then cace; the grapuel, together with citight feet of reps, remained in the home, and hundred af people flowed in to see it. The state is about two-und-wall feet high, of suck with fee fluits, and weight airty possule. It can be acreved lupper in sit are sever pieces. A second and similar grapuel in the low can Wille's, the gardener. The balloon, after having blown over the high road to Hanover, tripped against some telegraph wires, and nearly overturned. Four wires were broken in consequence of the shock, and three telegraph-posts tora down."

Other German papers say that-

"In the course of the balloon there were picked up several pieces of rope, some bits of iron, a speaking-trumpet, and a bat, with the maker's address in it, 'Boulevard de Sebastopol.' The latter piece of avidence suggests to the German intellect that possibly the people in the talloon might be Parisana."

At last we come to the narrative of one of the travellers, M. Engine Armonld, reporter of the French newspaper, 'La Nesion.' If this narrative is not, bepting, strictly correct in all its details, as we may be from a letter subsequently written by M. Nelar, it is, nevertheless, no graphic, that it ought to find place here:—

"My DEAR EDITOR, "Hanover, Tuesday, Oct. 2

You new us leave the Chasep de Mars on Sunday. You were a witness of the majestic ascent of the 'Géant' rising into the air amid the applasse of the crowd. They cried to us from below, 'Ron voyage!' Alas!

in It is the o'clock at night we ware at Equations; we posed over Malines, and towards mishight we were in Italiand. We now give yet high, in it is no accounty to one down to see where we were. Apportant of that, our publish was a critical size. Bodies as for a we could now, were materials, and in the distance we could have been applied to the season of the season

"We ware compelled to think of healing, in order to take in a litche ballast. Unlappily, the heavest had make uferget the early, now which there was indeed with a few industries are access, encourage definement of from, were bookers. This valve was that, and the halloms, which would early us no integer, began a gibly excert. We were from twenty to budy marries, and for with interestille face. Little by little the ballon caused in Kert were form twenty to budy marries. And with the metallic face. Little by little the ballon caused in Kert was not been a bound to be the second of the s

"dele Golei her tried and accomplished an act of militims herrism. He charbered up into the acting, the shocked with white were so trivilla that them time the fill of my book. Al keepth he resched the cost of the valve, opened it, and the gen having a way of encept the mounter caused to rise, but it still belot along in a horizontal lime with predigious mappinglity. There was we spatting down upon the final orizon at "Dato care" by weight, when a tree was in the way. We travel from it, and the tree was below: it the hallows was identicating it, gas, and if the instance plain we were compared to the contraction of the below was presented in the hallows was identicating in a space of the instance plain we were contracting lab vit a few freeze, we were award. But studiedly a forcing a possible with the setters. I get down in the car, and raining support like two two hour for it suffered from wound in my know, my treasure were tens. I jumpel, and make, I have see the wanny revalues, and full more my back. Here a minimic distinction I row. Those are was these for Cl. By the related of the contraction.

agred to the frost, and having goes of fer steps I local some grows. So, Felix was stretched on the soll flightfully diffigured, his body was now would be had now mit broken, the clost tors, and as aski distorted. The car had Gaugerout. After crassing a river I local of xyy. Node was stretched on the ground with a wide for Felix and Markov and the soll of the soll of xyy and yy an

"In sweatern hours we had made soarly 250 leggess. Our come inferred had covered a spec of three leggess. Now that it is over I hav one such addressings. It does not signify; we have non-ke good purers, and I marred to see with what indifference we may regard the most frightful doest, it for, helder the prospect of being deaded about our care, we had that of spining the sea; and love long doubtly when where there have been compared to have seen this—happier yet at having to narrise it to you. These Germans who surround us ore have people, and we have been as well carel for a last resource of the little equi will allow.

"P.S.—I have just reached Hanover with my companions, and reopen my letter to tell you so. The King has sent an eile-do-camp to us. Are we at the end of our revenes? At any rate, I am consoled to think they can no longer lungh at us in Paris. We have kept our promises, and more."

A faller account of the adventures of the balloon in Belginn, Holland, and Germany, was given by the ame writer in a second letter. It is so graphic that we cannot think of abridging it. Nevertheless, perhaps others of the travellers might tell the tale and the various incidents in a different manner;—

"We pound, I know not how noted time, in centeraphing, the exchanting seems around nu—best a length we all fit the necessity of gring downworth to new where we were. Freezethy the blackmon anse so was to the earth that we could resulty desiragion the tail chimneys of a great most finning framew. "If we were to fall more most of them?" and Mangalifer, another, These frames that have yet intelligent the wave in Belgium, and, looking, the Plenish congo that continuity resolved our case left no deast upon the point. Gelant, Nadar, all of u, called our frequenty to the popole theore, "Where are work but we spit to desirat nearest tank solved in the quantity of the noted as a operaturity of bouring that the purply of the nix is no depresentational to a security of the noted to the contraction of the possible of the size of the purple of the purple of the nix is not spectromatics the quantity of the notes belogd in the fitness of any hading, days. One second section of large the versame extensing. All this land a shall extend the time of any hading, days. One second section of large the versame extensing. All this land a shall extend the time section, the wind belte had, if we dark night, and our hallone drove now this principless nephility, and we were not able to left exceptly where we were.

"From the direction in which we had passed over Lille, we judged that we must be going towards the sea; Louis Godard fancied that he could see lighthouses. We descended again to within 150 yards of the earth. Beneath us we saw a flat marshy country, of sinister aspect, and indicating plainly the neighbourhood of the coast. Every one listened with all his cars, and many fancied they beard the mutmurs of the sea. The further we went on the more desert the country became; there was no light whatever; and it became more and more difficult to guess where we were going. 'I am entirely out of my reckening,' exclaimed Louis Godard, 'and my opinion is that the only thing we have to do in to descend at once." "What, here in the marshes?" remonstrated all of us; "and suppose we are driven into the sea.' The balloon went driving on still. 'We cannot descend here,' said Jules Godard, 'we are over water,' Two or three of us looked over the edge of the ear, and affirmed that we were not over water, but trees. "It is water," Jules Godard persisted. Every one new looked out attentively, and as the balloon descended a little, we saw plainly that there was no water, but without being able to say positively whether there were trees or not. At the moment when Jules Godard thought be saw water, Nadar exclaimed, 'I see a milway.' It turned out that what Nadar took for a railway was a canal running towards the Scheldt, which we had passed over a few minutes before. Harrah for balloons! They are the things to travel in-rivers, mountains, custom-houses - all are passed without let or hindrance. But every medal has its reverse; and, if we were delighted at having safely got over the Scheldt, we by no means relished the prospect of going on to the Zupler Zo. - Shall we go down? shell Lonis Goldan. There was a moment's passe. We consided together; so without part of the property of the pr

Two hours sped away; and at five o'clock day broke, broad daylight coming on with marvellons rapidity. It is true that we were at a height of 980 metres. Novel-writere and others bave so much abused descriptiene of sunrise on mountains and on the ocean that I shall say little about this one, although it is not a common thing to see the horizon on fire below the clouds. The finest Venetien paintings could alone give an idea of the luxuriant tones of the heaven that we saw. Such dazzling magnificence led me to woulder that there is no revival of sun-wership, since men must necessarily have some material representation of the Divinity. It is true that the ann is not made in man'e image. We now had beneath us an immense plain, the same probably that we had passed over in the night. There is nothing more pleasant at first sight, ner more monotonous, in the long run, than the sort of country which forms at least one-third of Holland. There are miniature woods the size of bouquets, fields admirably cultivated and divided into little patches like gardens, rivers with extraordinary windings, microscopic roads, coquettisb-looking villages, so white and so clean, that I think the Dutch housewives must scent the very roofs of their houses overy morning. In the midst of every village there is a jewel of a church with a shining steeple. While riding along at a beight of 700 metres, we had beneath us a picture of Paul Petter's fifty leagues square. All at once the tableaux became animated. The people below had perceived the balloon. We beard cries expressive of astonishment, fright, and even of anger; but the feeling of fright seemed to predominate. We distinctly saw women in their chemises look hurriedly ent of windows and then rush back again. We saw chubby boys looking at as, and blabbering as if they were mad. Some men, more determined than the rest, fired off gams at us. I saw several mansmas pointing us out to stubborn babies, with an attitude which seemed to say that our balloon was Old Bogy. Old women raised their hands against us, and at their signal many ran away, making the sign of the Cross. It is evident that in some of these villages we were taken to be the devil in person. On this point it is apropos to cite a letter communicated to me which has been addressed to the 'Courrier de Hanevre,' I translate it literally :-

"'This morning at about six elock, we saw passing over are bank, at a proligious height, as insurence remule form, to which was assipueded ascentibing which locked like a square house of art celestor. Some people pretend, to have seen animated beings in this strange machine, and to have beard issuing from it superhuman ories. What think you, Mr. Zhitor! The whole country is in a state of alarm, and it will be long before our people recover their segmanical?

"At 7 A.M. we crossed over a lake near Yssel; the wind then again dreva us in a new direction. nearly at right angles with that which we were taking before. In less than a quarter of an hour tha balloon got into Westphalia, near Renheira, then we crossed the great river Ema, the towns of Rheine and Ibbenburthen, and returned to Hanover a little above Ownsbruck; we traversed, without deigning to take notice of them, a little chain of mountains, and by way, no doubt, of relaxation after so long a journey, went all round a lake, which is called in German Dummersee. We then got into a great plain, through which runs a road. At this time the bulloon became almost metionless. The reason of this was, that the heat of the sun had caused the gas to expand. The thermometer was then at 14% (about 59° Fabr.). Louis Godard was very uneasy about this dilatation. After two or three oscillations, our sarial courser decided upon going off rapidly in an eastern direction, with about two degrees variation towards the north. This course would have taken us to Hamburg and the Baltic, but wa were all so completely absorbed by the splendour of the tableau before us that we took little note of the change. Our hippogriff passed ever Wagenfeld-Steyerberg, where there is a river which flows into the Weser. We came within sight of the great river and Nieuburg, a considerable town on one of its banks. We saw a steambest going down the river from the town. The view here was charming. A rustling of the silk of our balloon made us look npwards; the monster, under the influence of the sun, new very het, was palpably swelling. As it would have been supremaly ridiculous, after having made such a first-rate journey, to have treated the inhabitants of Njenburg

with the operated of using as short up—to any anting of the consequences of such a catastrophe to our war. limits—we revolved to come down. The remaining bags of ballat wave got in early, the repse and the antionprepared, and Godred operand the antity-valve. 'The monetar is diagority:' rankinged Tablica. And the hallow did view in first leng with the transition noise, which may be compared to the moring of some given and the limits of the size of the transition of the contraction of the size of two noises to the second. "The travent to interpret—ball at word ("rich the hardest Godrack wis executed quite in their densities," that "The travent to interpret—ball at word ("rich the hardest Godrack wis executed quite in their densities," that "The travent to interpret and the size of the contraction of the word of the size of the contraction of

"I was en one side towards the middle of the not of burdle which serves as a balony. I was on my hose and changing to en year. Mongdiller, Thino, and shall relike use searce. The balond motioned on repuls that it goes us the verige. The air, which we had left so calm shave, became a violent wind as we nested the search. "We are going to throw down the anchor, and followd," but digit." Thus the are arrent the east with transcaled a violence. I commiss imagine how it was that up arms were not broken. After the first terrible shock the balon west up equal. I was the first the size of the size of the control of the co

"If the hallow had dragond as through the sown we should, inevitably, have beer cut to pieces. But formstably it mes in little and been hamped against the ground pair with a such vidences as before. Every need of these shocks wreached our limbs; to complete our misfertness the rope of the subgrovable spit loses from us, and the subgrovable subground grow he all this post the balloom captings into M. It was to all postess of twenty-fittiative, and forty metros from the certh, and continued to full upon its bend. Everything that stood in the way of the car was doubted to pieces. Every minuse the regular have dragon, and what shaper! Now we are berified to thick of it, in all decise upon my benner that at the time not one of an otherwise of the weight of saving his sevalish at the negation of the community. Several times some one of a might have jumped out, to them the balloom, being lightened of a considerable weight, would have sometime than growth or the subground of the considerable weight, we will have some of the contractively larkested datum and yet his power somes never streat ears. Profit gives we will be mounted by and over lower were crucking, the looked at her inshead and at us or almity and so sweetly that we would all willingly have been crucked to the awared here."

We complete the narrative of the second ascent by giving here Losin Godard's own account:— The departure presented nothing renarhable until Equatines was rescled. If the balloon did not attain any great elevation, it was because the necessaris wished to avoid all dilutation, in order to make a long voyage; if they had wished to have preduced as effect upon the public, they could have attained the highest elevation by throwing overload of Dis. or 80 lbs of ballast.

The halloon need on fite days, belonging to MM. Godwal Brothers, decked with flags bearing the initials of HB. Majers the Dampeor, and the "Ginat," met four or five times in the air, and the accessment of the later, thinking they were addressing the inhabitant of a town, received the replies of M. Godwal, senior, who directed the small balloon. This parent disk not cases until St. Questiu was reached, where the latter descended.

The "Giant" continued its route. Signalised at Lille, it proceeded in the direction of Belgium, where a fresh current, coming from the Channel, drove it over the marshes of Bolland. It was there that M. Louis Golard proposed to decread to swit the break of day, in order to recognise the situation and again to depart; it was one in the morning, the night was dark, but the weather culm.

Unfortunately, this advice, supported by long experience, was not listened to. The "Giant" went on his way, and M. Louis Godard no longer considered hisself responsible for the consequences of the voyage.

\* The letter of M. Louis Godard, given below, mys, in two places, that the balloon, when descending, was driven by the wind at the rate of sixty lengues an hour; but this is probably a misprint.



The balloon coasted the Zuyder Zee, and entered Hanover. The sun began to appear, drying the netting and the sides of the balloon, wet from its passage through the oboods, and produced a dilutation which elevated the serenauts to 15,000 feet.

At eight o'clock, the wind, blowing suddonly from the west, drove the balleon in a right lina towards the North Sea. It was necessary, at all hazards, to offect a dorcent. This was a perilous affair, as the wind was blowing with extreme violence.

The brothers Golard (Louis and Jules), assisted by M. Gabriel, opened the valve and got cut the anchorabrothers of the horizontal progress of the balloon suggested from second to second. The first obtainwhich the anchora encountered was a tree; it was instantly uproveted, and dragged along to a second obtaic, a bone, whose roof was/earried off. At this measure the two cobles of the anchora were broken without the voragers being wave of it, such was the recojlicies several station, dairy (f) Suggest as hour,

Foreseeing the successive abocks that were about to cause—the moment was critical, the least forgetfalness night cause death. M. Lonis Godard did not come to give to all repeated encouragement; the balloon still went on at the rate of sirtly fasques an hour; through opening the valve it had lot a certain quantity of aga, and could not ascend. To add to the difficulty, its inclined position did not permit of operating on the valve, except on the

At the request of his brother, Julea Golard attempted the difficult work of climbing to this hoop, and, is splite of his known agility, he was obliged several times to renew the effort. Alone, out not being able to datab, the cord, M. Louis Golard begged M. You to join his brother on the boop. The two made themselves masters of the rope, which they passed to M. Louis Golard; the latter secured it firmly, in spite of the shocks he received. A violent shock shock the care and entanged M. Se district Pair, under it, as it was ploughing the ground;

it was impossible to render him any assistance, notwithstanding M. Jales Godard, stimulated by his brother, leaped out to attempt mooring the balloon to the trees by means of the ropes. M. Montgolfier, entangled in the same manner, was reseated in this and saved by Louis Godard.

At this moment MM. Thirion and D'Armoult leaped out in their turn, and escaped with a few continuous. The car, dragged along by the balloon, broke trees more than half-a-yard in diameter, and overthrew everything that opposed it.

M. Louis Godard made M. You leap out of the car to assist Madama Nudar, but a terrible shock threw out



GODARD'S "L'ARGE " (1864).

MM. Nair, Louis Golard, and Montgolffor—the two first against the ground, the third into the water. Madamo Nair, in spite of the effects of the voyagers, remained the last, and found herself squeezed between the ground and tha car, which had fallen upon her. More than twenty minutes elapsed before it was possible to disenstangle her, is apite of the most vigorous effects on the part of every one; it was at this moment the balloon herst, and, like a foreion monter, destroyed every thing around it.

Immediately afterwards they ran to the assistance of M. de Saint-Felix, who had been left behind, and whose face was one wound, and covered with blood and mire; he had an arm broken, his chest graned and bruised.

I terminate this true relation in thunking the lighthurst of Rathern particularly our analyses and the

I terminate this true relation, in thanking the isbahitants of Rethem, particularly our ambassador and the king's eavoyé, for the care and attention they showed us.

(Signed) Louis Godard,

M. Nudar, dating from Hanover on the 26th, wrote-

"All goes on better. We are shout to return to Paris on our backs; but in a far better state than eight days age.

"As it is impossible at this moment to write to all the journals which have been pleased to mention our second organ, with a sympathy which profoundly affected no, I shall be grateful to them to reproduce the present explanation.

" NADAR."

I cannot omit to insert in this history a few extracts from the 'Oraison Funchere' on Depais Delcourt, given by M. Nadar in the preface to his 'Meinoires du Geant,' Though we are not accustomed to such discourses in our own country, yet in this instance it is my desire "to show how much the zeal of one man in a good cause can effect".—

Today, Smaley, 3 April, 1484, hirty prease were assembled at a small house in the Box de Sourier, Drint. From these we preceded in the nich to inter the particular of French areasses, Son-Beptiste Depairs, Delover, born 25 Morch, 1892. Despit Nelsourt was known both in the liberary sold the scientific worlds; but the areasses be beloating as of animate states or could sever trum his non-mortation, for string posits. It had not accompanied to the string of the string of the string of the string posits, and the string posits, and the string posits of the string of the string posits. It had himself under many acceptance of the string of the string of the string position of the string of the string of dismont.

The Academy on five occasions named commissions to examine the scientific communications he sent in to them with indefatigable zeal.

He laboured with Arago in the construction of the "electro-subtractour," an instrument that could at will deliver us from hail, not only in its falling but oven its formation.

In the Orangery of the Luxembourg be had made public experiments with the aerial screw; and emong the most attentive of his auditors was Geoffrey Saint-Hilaire.

He founded the "Aerestatic and Meteorological Society of France," of which he was the coul; and in recognition of his services they named him their Perpotual Secretary,

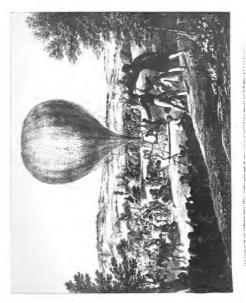
Even after the austhess of Marcy Mongo against metallic gashedders he completely rained himself by the construction of a copper ballow); but for the wast of a few harded frame to supply accessories it could be note, and he was obliged to sell it. He published twenty books and pumphlets; among others the 'Mannel de l'Appestior,' one of the best volumes of the usefar Empelopestic in General.

He leaves almost finished as important work, outitled, 'Traité complet, historique et pratique des Aérostatz.' Of this he said, "Ce sera probablement la grande affaire de son vie!"

He founded a Journal of Aerial Navigation; and, full of fervent faith in the feture of this science, he collected, with his scanty purso, under many privations, the best Aerostotic Museum that exists.

Now, this man, greatle and hrave, modest, laborious, and disinterested, after having devoted himself to an idea that may have the grandest practical effect on the human race, lived with resignation and confidence in extreme peverty, and dived posterday, leaving his collection as his sole legacy to the agod companion of the last thirty years of his life.

This worthy woman, who, with the faith a wife has always in a husband, had followed him overywhere,



according to the Gospel, and even beyond the code, as far as the clouds, now preserves with a pious respect the COLLECTION that will hereafter be well knewn as that of DEFUS DELOCKY.

To complete this chapter I here annex some extracts from a curious work entitled 'La Navigation Aérieune' (of which, however, I do not guarantee the authenticity).

'La Navigation Arienne en Chine, relation d'un Voyage accompli en 1869, curte Font-écheo et Nanchang, 'Pu Polaville Borleru. This work, which appeared in Paris in 1863, custains many ideas that are novel. The author reminds the reader of a book called the 'Merveilles de Grüne de Humme', ly Amélée de Bast, wherein it is stated that Father Vasoca, a missionary at Canton, in a letter dated September 5, 1694, mentions a balloon that assembled on the coronation of the Emperor Fo-kien, in 1300. He found this recorded in authentic official deciments. M. Dedrexe then states that, laving gone far into the interior of the Celestial Empire, he thinks it his duty to publish what he there saw; but not being a scientific man, he can give only an account of the facts.



N aerial equipage one morning coming suddenly in sight gave rise to the following conversation between the Mandarin Kie Fo, his protector, and himself.

The Asiatio sarcastically remarked to his queries, "Are you not so far advanced as to have these things in Europe?"

Oh, yes," answered the European, " but they are of smaller dimensions, our engineers devote their attention obiefly to the study of the methods for destruction, and you have seen what they can do."

"As it is evident," replied Kio Fo, " that you do not know much about these aerial ships, I shall be glad to make a trip with you."

"I shall be delighted, and am ready to run all risks."

"No courage is required," continued the Chinanasu,
"as aerial locomotion is the most agreeable and least

" Can the Chinese guide balloons at will?"

dangerons that exists,"

"Not altogether, limit it is seldom that the captain does not follow his proposed route, and return within a given period. This is effected chiefly by a knowledge of the strougheric currents, and of the meteorological circumstances that change their direction. The knowledge of the winds is a reisonet hat is enriched by failly observaof the winds is a reisonet hat is enriched by failly observa-

tions. The Celestial Empire possesses a great number of observatories, which send their reports of the currents at the various heights to the captains of servotats, who are guided accordingly."

"But been de you know the direction of the currents?"

"By someting, as we have an instrument called the state-opheric sounding line which is only a small halloon connected by a string to a tower thirty feet in height, which contains a large wheel that marks the number of feet moundled. The top forming a horizontal include in sidual claim 600 deageres, the fast corresponds to the north, &c., the direction of the current carries the string in a direction marked by one of these lines, and no mistake is vanishe."

" I understand that perfectly, but how do you transmit the intelligence to the place from whence the acrostet starts ?"

" It is in this that the inventive genius of the Chinese is shown, for many are employed with a variety of trumpets that give different sounds for each line, which are repeated at smaller stations till it arrives at the place of departure." I stocks to bim of the telegrands, but it was useless.

This convenation resulted to my nine what I had seen in tha Lendon Exhibition of 1933 (called Universal, at which, however, China showed nothing). A map of Expland was shown no which noulds were placed and the principal ports, and were surraged each day according to tolograms; one was thereby able to me at a glance the direction of the winted all single two ones. I have thought that such as any adoption for Extrape would be given as weather that the contract of the contract

"That is the case," replied the Mondrin, "It whiles happens that one can travel in a straight line. The talest of the explain coasists in failing cut the quickets roots; often when the north is the god you may see him making for the east or wort according to his directions. He carries sounding-lines that acquaint him with the currents above and below, and of these he can take advantage,"

"I can inderstand the method for raising and lowering the machine, as one of our engineers explained it in theory seventy-five years ago; but no use hos yet been made of it. What still paszles me is this: On the sea a capatia by the auditance of the log and compass knows the rapidity and direction of his rosts, but the captain of an serontst cannot make use of these."

"I beg your pardon, the compass is used; as long as the earth is in sight it is not much required, but above the clouds, or at night, or in an unknown country, it is of the greatest me,"

I had formed my opinion from the works of Losis Figioire, called \*Exposition et Histoire des principales. Reconvertes sixentifiques Medernas, who in his remarks on halloons ways, "the form of the ship catables the captain to judge of the direction when looking at the compass, but in the air there is no line to guide the eye of the accumant."

"To you, your author may soom right," ask like Fe, " but he is wrong in our view. I will explain the 'time nethod. Our oblong serestaft that keeps its stern to the current has an imaginary line posing from stem to prow. Now yoe know that a bost is a current without ours or sails will here any say, but the least resistance caused at the stem will make it keep lengthwise with the stream. It is by resistance at the stern that we keep the acrossite even with the current."

- " How can you produce this resistance?"
- " Simply by the rotation of a screw at the stern. A man turning a bandwheel would suffice."
- " Well, I understand; but how can you make up for the log, for determining your swiftness?"
  " By a hauszer."
- " What do you mean by a hammer?"
- "By a lammer and a lamp—this will explain it. You did not see, this surning, a single one but two scorotic free; this is always the case. A complete explain pelasyre consist of free. A large stress control of the pelasyre control of the pelasyre
- "I understand; but it must require a quick mon as markor."

  "They are in great demand, and their pay is high. The lamp is required by night, and also on account of the raphility with which light travels. Hold yourself in readiness to start to-morrow morning."

I was astounded with the conversation, and at learning in a few minutes so much about principles that are regulated insolable in Europe, or at least very deablifed for Faulisation, while in the Colestial Empire they are well and applied on a large scale. Yet it slid not appear to me that the art even here had reached its utmost perfection, but that the outplaces of Europe could afford many improvements.

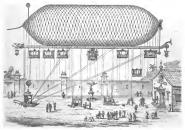
The Mandarin informs Mons. Dedreux that their sovereign being the son of Heaven, is infallible, and that of necessity his ministers partake of his infallibility.

" If, therefore, electricity (mentioned in the convariation of yesterday) could have been of use, it would have been adopted. It is not likely that you who are ignerant of the first principles of this science could suggest an improvement."

"Take," he continued, " this silk dress, well suited for changes of temperature, and let us start."

The fruitness of the norming was enjoyable while we walked down a globe through a wood that extended along the valley and put a sides of the hill is a either side. It plantilly parameted live as set and in a supplishent lose than a mile in circuit, with above propositionar before, relatingly abread by the hood of man. Here we fixed me are restorated of stoney whitecosts, all turned in one described. Here is a set of the contract of the contra

"This," and Kir Fe, data enjoying my surption, is the destring-plots. Many towns have similar stations arranged by rules that the experience of contries has recolored parameter. Their form; you will observe protects then from all winds. These well were alogo are for the decent of the towing-mailstens; that opin queee in the landing places for decessively light occurvy user in all directions, as it is required before waterly. We assemble the data arranged to the contribution of the



THE CHENESE ARROSTAT.

place corresponds with our word terminus). We noticed that it was not adapted for holding more than five equipages (that is ten acrostate, as two are always connected). We arrived opposite one and found a waiting-room that opened on a level square. (See vigoutte)

About the centro of the court I saw a chairfo, low and massive, so four wheels, barring a bolst semewhat similar to the excel and Ecospons hallow. Them this lakes there accorded four ropes stated on a Soriestan not commenced at prow and storn by the level and tall of a dragon. This appared immovible about thirty feet correlated. On examing the balloon above I found that it was not explayated in Individual for a simple state of the same and the same of the sa

"That man in the chariot," said Kie Fo, " is the watcher."

## " What is be watching?"

"To see that the arrowal always keeps langibusies to the wind. He effects this with the four conductive time that in an open country, with a strain yet find, we can also thill their sin. Beauth, be added, that the first rape descending from the provi a famous verifical, it is the axis of relation (or the stem of the weatherooth), while the fourth prop represents the hypoteness of a right-angel training, of which the mast ferming one of the side always horizontal. The intermediate topes are more especially introduced to prevent the mant from bending, from the assecutive force of the accreaint, force of the accreaint, force of the accreaint, force of the accreaint, force of the accreaint.

The capital whiteled, and the curs were lowered, each containing two seats. Two new sho managed the machine fact to their seats in the central ext. Two lades were then admirtd. We go into the second care from the prove, the first being compiled by the capital and lieutenant, while the cur measure the storm conveyed themselver and his assistant. We were weighted, as eacher must carry 100 biligonames, credible; the credible of the control of the core. The total weight carried by the secretal was 1000 biligorames, excluding the credible of the core. The total weight carried by the secretal was made fast. After writing a few minutes to see whether any one was coming to ecopy the vacant car, it was filled with water and belief also.

Our servotat," said Kie Fo, " is the one that leads, and carries, therefore, the captain and marker; whilst the other carries the striker and the 'sondeur' (or the carrier of the sounding lines)," "Will not our watcher also be hoisted;"

"No, he always remains thirty feet below us; his duty is to throw the anchor, and when the equipage

reaches the ground in becomes the towing-machine; he it is also who, at the signal of the captain, starts us."

I heard near my car the movement of a rope, and saw one slidling along the mast. "They are making the tackle fast." and Kie Fo.

A prolonged whisele from the rear balloon was answered by our captain to the watcher to "Let go." We ascended rapidly several bundred feet, then moved in a borizontal direction. I shall not endeavour to describe my feeling.

" Well," said Kie Fo, " do you thick it requires much coursge to travel in our sensatan? To you not feel in perfect security?"

" Yes, and the sir is most refreshing."

" All feel this: and for this reason it is that those ladies are enjoying this excursion, being a more pleasant airing than can be found on land or water. We have here neither jelting, nor dust, nor sea-sickness, no danger of founding, nor of being upper to impoded."

" The only danger is that of being precipitated to the ground."

"No, that danger does not exist; what could cause our full? There is no frietin, it goes with the wind, Pleng always full there is no risk of tearing. It is painted white so that the sun's rays should not affect it. As it severe approaches nearer than thirty feet to the earth there is hat little chance of damage; it is besides carefully fasqueeted at starting. You shall, however, see these in process of building, and I trust that you will then be reasoned;

" I am already. Who is that traveller?"

- " A consumptive man who makes two journeys a week; when he has strength to make three he will probably be enred."
- " Aerial voyages have then medicinal virtues?"
- "Certainly, all our doctors agree on this, and their opinion is based on excellent statistics. The only drawback is that it is an expensive ours, which only the rich can afford."
  - "Who is that little dried-up man? He has not the air of being here for his own amnsement."
- "Ho is a commercial traveller of a large home that these business in jerethery, gold and silver fligures, pointing on rice-paper, and other merchandise of great value and little weight. Small this men are sumply closes for this situation, so that weight may be economised. I am sure that he does not weight fifty kingrammes. As there will tast has more be a done of water at the better of his statt, the difference is made in why his warms.
- " Who are the twe in nniform?"
- "They are two efficers in the Aerial Service of the State, going most likely to join their serostat at Nant-Chang. The distance from where we started being 300 miles, we shall arrive about moon if the wind is favourable."
  - " Has the State then an aerial flotilla?"
- "Certainly. Solvanific records is the clief adject of the State screames; the offeren being trained in relevals for the purpose; and is a service metal to regree properly, angong, automong, naturally and collect resistors have been sarisfied by it. There is not ease of our constaints that late not been explored by Chileman senses by means of those accusate. There are many arrantives of vorgane for the teach, but they progree he bent stopped by the exceeder best. An exemplant part continue to the properly of the properly in the contract of the properly in the contract of the properly in the contract of the properly in the properly in the contract of the properly in the properly
- " I shall be much obliged."
- "Among the travellers who have naintered to reach the Vol, but have been repped by the ins, how been somewhat have been a top-of the dependent of the same who have proposed adopted surply has to seen the matter seen. If must not reach have remain the same of the same
- "Thus you see," said Kie Fe, folding up the paper, " that the idea of visiting the Pole by an aerostat travalle is excels, and I shall not be surprised if it is soon tried."
- "Whatever may be the result, the nation that first tries it would deserve honour; but as your secostat makes such long voyages, hew does it happen that near of them come to Europe?"
- "Your Itile constry is learly worth the trouble. Barbarians (without any intention of offording you) are not estermed by our government, who are certain the Chinese would only import permittions ideas from Europe. Accounts are therefore forbidden, under penalty of death, to visit that small agelomentation of will-disposed and fighting men, that I'rovidence has collected into a corner of the earth, of which the C'elettal Empire reception to
- centre."

  "The Europeans, believe me, are neither so vicious nor fond of fighting as your government would make you believe. If they would allow you to visit us and study our manners, you would certainly change your opinion."
- "To speak frankly, I agree with you, but I dare not proclaim it for fear of punishmeet; a day will doubtless come when the present ideas will be changed."
- "I trust it may arrive quickly, for the benefit of mankind."
  Whilst talking in this way, we were moving rapidly, as from the lowness of our altitude the country appeared
- to dy along beneath as a which interrupted our conversation.

  "The captain," and Kir Fe, 'is executing the toware of childre, posted in rear of the servotat that follows us, to begin working. Since our start the two servotats have been at an intermediate distance. Not having has eight the ground, the captain, who well known this country, has not required the instruments for storing; just it appears to me that we are going to higher regions to find another current. It will then require both the compose and the 'spec-densiting' dist.' We can just see from here the cotion of the serve that strated the market.

of the second accostst. The cable is stretched as it should be: the two accoststs are now 300 metres from one another."

- All at once a prologged hissing caused see an instant's alarm. " Do not be frightened," said my friend, " some of the atmospheric air that was enmays in the acrostat has been allowed to escape. We are about to ascend some 3000 feet."
- In a few minutes we were in the clouds. The striker was at his post in the second acrostat, as from time to
- timo I saw the flame of the lamp, and an instant after heard the blow of the hammer. The marker at the stern of our acrostat called out the speed indicated by his disc, and the lieutenant beside
- the captain at the prow took note of the measurement. The telegraph would be better, I thought; but, aloud to Kie Fe: "We ascend therefore, on account of the
- escape of a certain quantity of atmospheric air enclosed in the acrostat; and when descent is necessary the air is again pumped in, I suppose, at the central cabin."
  - " That is it : but who has instructed you in this?"
- " I have already told you that what I have just noticed was imagined and proposed in Franco eighty years ago. It was even tried; but, not succeeding, the experimenters were satirised, and they took care not to risk their lives again; as my good countrymen often forget that unhappy mortals only arrive at success through failures. These two lines of our immortal fablist apply admirably to the first realiser of a new idea :-

### "Il a'y prit diabord mal, puls ue peo mocus, puis bien, Puis codo il a'v manosa rica."

Now our seronants, among whom was a royal prince, the Duke de Chartree, were unsuccessful, and were ridiculed instead of encouraged. The idea they endoavoured to apply had been the subject of a clever memoir presented by its anthor to the French Academy, and was very favourably received by that illustrious assembly,

The check those courseous more not with at starting caused the project to be laid aside for half a century. till in 1840 the distinguished author of ' Histoire des principales Découvertes scientifiques Modernes ' again brought it to light.

I will here suspend my narrativo and give the 'Memoir du Général Meusnier, Membre de l'Académie des Sciences,"

This is worthy the attention of all who have time to devote to this science; but, as it will not interest the general reader, it need not be inserted here. M. Dodreux continues:-

I will point out the relation of the Chinese accostst to the foregoing calculations by the description of the serustat in which I made the ascent,

This acrostat, as I have already said, was a cylinder terminating at both ends in cones, it was 16 metros in diameter, 40 metres in length, and its velume about 7000 cubic metres.

In the interior running the whole length of the acrostat there is a light impermeable canvas that divides it in two compartments; the upper for containing pure gas, and the lower for the atmospheric air that constitutes the ballast. At starting the lower compartment is full of air, and the canvas division takes the form shown at A, representing a transverse section of the acrostat.







At low altitudes the canvas separation finate between the gas and the air, as at B. At the highest altitude the balloon can reach, all the air is forced out by the expansion of the gas, and the

canvas division rests on the exterior covering of the acrostat, as at C.

I omit the calculations which M. Delaville Dedreux gives to show the powers of this machine, merely adding the conclusion:—

. .

Let us now remain to what height this arrests can rise. It has reached its greatest diffined when there is not air in the lower compartment. The gas contained at starting within a spore of 4500 metres. But a this leight a variance of 7000 metres. Its density is therefore dissibled one-third, and this is always equal to that of the "atmospheric layer," in which the accretial respected, Its because or this leight is at 35 continued to the contract of the starting of the column of the humaniter corresponds to an although of 2000 metres, and "who the height our records on age," and like Fe of the column of the humaniter corresponds to an although of 2000 metres, and "who the height our records on age," and like Fe of the starting of the column of the humaniter corresponds to an although of 2000 metres, and "who the height our records on any," and like Fe of the starting of the starting

We did not reach this height: betwee remained long in a thick role, and I was not normy of keeple to bear the captain order the two mon in the cartal colut to work the verificate, on as for one descent. This verificate's located links a borisanted funed, two notes in dismeter, that takes in the sir from below, and throw it into the asensal to year writted pies of impermable course, by this means no fore; is wasted. Beales, by the position of the funed it causes the vessel to descent by such as the size of the funed it causes the vessel to descent by such king in the circumstablest tie. Nevertheless the demonstrated to king by, the assemble, of our such takes it subject to most place it is the complement; in State aerustate sight time work it. It is no light affair to pump in the 233 cable metrus required to make an aerustal descent from a height of 300 metrus.

" Steam-power would assist you."

"What! put fire under an acrostat! Are you a fool? That is not possible!"

" It is, as I saw it in Paris, where an engineer rose with a steam-engine of 3-herse power, hoping to find a method of direction: but not succeeding, he did not try a second time."

Whilst lost in reflection, Kie Fo showed me in the distance a black spot which was the terminus of Nantchang. In another half-loar we were over the plain for the towing machines. As the serestat kept on descending as we approached I saw that we should soon hand.

On the plain were two durints with four horse satisfact to these I and noticed at starting. They appeared to be waiting for m, and one earch of the own as men on horselows. The nearest clothed filtered as whilst the charles better be

" Do you observe," said Kie Fo, " the necessity for placing the terminus in the centre of a vast plain, with a hard and level soil that will allow horses and chariots to move in all directions?"

"Yes, I noticed the wind did not take ne direct to the terminus, and that if we had not been towed we should have passed to one sid of it. You rectify, by towing, the inexactitude of the winds. It is well contrived, I nade-rated now the use of the chariet and four horses."

"Notice also that they are heavy and low to prevent being speet. When the wind is contrary or too violent they remain stationary, lock the wheels, and wait till the weather is more favourable."

We passed the rest of the day and part of the next at Nant-chang, and went to the building-yands where the accreasists are constructed; but third redeription would fill a valume. It salmired with what economy and rapidity these normous machines can be constructed, when all is provided by suitable contrivances indicated by long statistics.

I remarked that in China a new serostat rices from its building-park, instead of what has hitherto been the cutton in Evrope of drugging a machine inflated, or half inflated, to the place of sects, much to it injury; as wasthe case in 1878, when the fomous serial ship, " I 'Algis," of M. De Lannox, with the present difficulty was brought to the Champ de Mars; where it arrived almost in tatters—to the discentent of the multitude, who tore it to pieces. a.p. 1860

To come from Font-chon to Nant-chang, we had left in the morning, in order to profit by the sea-breeze that reaches far into the interior; to return, therefore, we were to leave in the evening to take advantage of the landbreeze.

Whilst waiting for a repart, Kie Fo took me into an office of the Terminus, where on a table I saw a map, similar to the one I had seen in London in 1851, with the observatories marked by black circles, on which were four needles superimposed on each observatory; these showed the directions of the wind throughout a vast tract of country at the respective heights of 2000 metres, 1500 m., 1000 m., and 500 m.

The clerk without hesitation named the hour of our departure.

I shall not give the description of the return voyage, but M. Delaville Dedreux ends his book with this wish, that our engineers will be able " En combinant les procédés Chinois avec les découvertes modernes de notre hémisphère, ils doteront sans doute l'humanité d'un nouveau et puissant moyen d'investigation de diffusion des lumières et de civilisation.

" Ils feront de notre siècle le véritable Grand Siècle."

#### THE UTILITY OF ART.

Two men 1 honour, and no third. First, the toilworn craftsman, that with earth-made implements laboriously conquers the earth, and makes her mus's. Venerable to me is the hard hand-crooked, coarse-wherein, notwithstanding, lies a cuming virtue, indefeasibly royal, as of the the sceptre of this planet. Venerable, too, is the rugged face, all weathertanned, besoiled with its rude intelligence; for it is the face of a man living manlike. Oh, but the more venerable for thy rudeness, and even because we must pity as well as love thee! Hardly-entreated brother! For m was thy back so bent; for m were thy streight limbs and fingers so deformed: thou wert our conscript on whom the lot fell, and fighting our battles wert so marred. For in thee, too, lay a God-created form, but it was not to be unfolded: encrusted it must stand with the thick adhesions and deficements of labour, and thy body was not to know freedom. Yet toil on, toil on; they art in thy daty, he out of it who may; then toilest for the altogether indispensable—for daily bread

A second man I honour, and still more highly: him who is seen toiling for the spiritually indispensable, not daily bread, but the bread of life. In not he, too, in his daty, endeavouring towards inward harmony, revealing this by act or by word through all his outward eudeavours, be they high or low !-highest of all, when his outward and his inward codeavour are one-when we can same him artist; not earthly craftsman only, but inspired thinker. who with horses-made implements conquers houses before as! If the poor and humble toil that we have food, must not the high and glorious toil for him in return, that we have light, have guidance, freedom, immortality? These two, in all their decrees. I become: all else is chaff and dust, which let the wind blow whither it listeth Unspeakably touching is it, however, when I find both dignities united; and he that must toil outwardly for the lowest of man's wants, is also toiling inwardly for the highest. Sublimer in this world know I nothing than a peasant saint, could such now anywhere he met with. Such a one will take thee back to Nazareth itself; then wilt see the splendour of heaven spring forth from the humblest depths of earth, like a light shining in great darkness .- CARLYLE.

All things are full of labour; man cannot atter it .- Eccas. i. 8.



# CHAPTER VIII.

### WAR-BALLOONS

"Whytever is complicated, fails in predicting good results in warfare; the premoters of systems forget always that the object of progress ought to be to obtain the greatest possible effect with the least possible effort and expense,"—Xaronzov III. Treatise of the Past and Presat Use of Artilley.

THE FARSE SEQUENCES IN WAI — PRESENTED OF ALMOST COMPANIES OF A STREET OF A STREET OF THE FARSE OF THE FARSE



Is the early part of the Revolutionary War, when ingenuity and science were so engerly called in eaactive exercise, the arrans of the French Academy recommended the use of balloons as a means of recommissance. Under their auspices an Aeronautic School was established at Mendon.

It was found with the struct secrety (eaps Mr. Wee), we fast the powers opposed to the Frenk could not avail timentive of its obvantage, until the first pojectors had already used it in solvantage, until the first pojectors had already used it in solvant of the structure province. The management of the Institution was consulted to the non-tenient pulselyses for Gravic Guyden de Morward, the orderestand French chemist, and Cohord Contillerage in the structure of the structure o

generating hydrogen gas was by decomposing water with the sild of old of virial, and iron filling, and beinge, Be Mercens introduced another exacted in this case. For this purpose, as it more glichness were fixed by messary in a simple bild of furnace, each of their each projecting, and covered with an iron bild. Two sets of most that were and insterted into these bilds, one for caverying in the water, and the other for carrying of the gas which was formed from the water. The cylindren being charged with iron tunings, and brought to a red bast, the bundling of the water was intantally covered into steam, whose expanded particles was non decomposed, by the oxygen multiple with the robbs from, ferming on soits of iron, whilst the phrapes was then front, and fewer to by it own presentions, the state of gas that might alless to it, when it was preferely gave and rolls for the follows. By the most old key prescribe, at a very moderate capson, a quantity of gas sufficient to infance is allow they two feet in diameter, which holds 1700 cells feet, in the owner of four lowers. The specifing infance was well per constraints of the owner of the colles. times rough for currier; and, when as in use, it was fortened to the terror of the lodge, in the open air. Whenever the woulder was first the colored of the copy and a papil south themselves in the cri, when the madeline was sufficient to rise free or air handred feet, arranged by our dast windless. This primary novement because as object to the contract of the contraction of the contractio

In Jan., 1784, Contile seconds in the variations. Extrepensal, to reconstitute the bottle army, just below the latter of Person, is compared to Jan. Applicate and Gerent. How pow to a bright of werell thousand feel, with their width-to-suchdarry or arranged that they could make it stationary at any given addition. They mounted trains in how owner of that day, and remained up work that also far for horn. During the second serving construction, they were discovered by the renzy, coming construction and surprise within their lines. A fairly construction, they were discovered by the renzy, coming construction and surprise within their lines. A fairly construction of the origin lames of war alsh, however, one of Edward, but the observate as their key may be also keep to be a simple content of the second construction of the content of the c

The following is the report of Colonel Coutelle on military acrostation with the armies of the Sambre and Meuse and the Rhine (1794-5):—

The Committee of Publis-Sicty assembled in Commission de Serana, "mong when were Monge (the inventer of descriptive geometry), Bertholder, Guyton de Mervan, Forreny, Carnot, &c. Guyton proposed to make the aerotat useful to menies as a means of observation. This proposition was accepted by the Georgement, on condition that subjustive soid should not be used, all subjust testing required for the manufacture of gunpowher. The Commission then suggested the use of decomposed water.

This experiment, made by the celebrated Lavesiner, and repeated in our laboratories, only gave annul results. An experiment on a large scale was necessary, as twelve or fifteen thousand cubic feet of gas was required on the shortest notice.

abortest notice.

The experiment succeeded. I made five or six hundred cubic feet in presence of the Commission; who were so actified, that I received the order next day to go with numer speed to Manberge, and propose to General Journan the employment of an invested for his arms.

I arrived at heatmont, covered with most; for I was obliged to go eighteen asles without drawing rais, by such had reads that artillery would have sunk to the authertees. The officer' to whom I delivered my order could not understand my mission, nor the readships of the Committee of Publis Sately, and still less an accreate in the middle of the camp. He threatend to have me shot, as a suspicious character, before listening to me; but needs, however, by relating and complicating me on any devoting.

The army was at Beaumont, eighteen mikes from Manberge, from which post the enemy were only one league, and could attack at any instant. The General made me observe this, and ordered me to return and report it to the Committee. I arrived at Paris face pageding two days and a half on this expedition.

The Commission were then aways of the necessity of some perliminary experiments with an accusta fit to take up two peeple, so the put at any disposal the character and gradue of Mesdon. Comits desired are: after amounted all was ready, and I gave notice to the Commission that they might witness the first experiment of a balloon ledd by two report.

This was Dospowner, who held the office of Commissioner of the Army of the North, and whose singular day is was to "see that addies we set indo battle, and to force the receive to compare under morner of the guillotine." Dupomer was at dissure when Contribe arrived, he know nothing of the Jonation.

orders of the Committee of Public Safety. "Un ballon!" and he,
"un ballon dans le camp! Vons m'aves test fair d'un suspect, je
vais commerce par vous faire fasiller." This bet-tempered Commissionner at length listoned to reason, and sent Conteile to General

When scated in the ora; the Commission gave me altrections at to the signals and observations to be madad I row to the limit of the ropes (500 yards). Being at the time about 750 yards above the Seins, I could perfectly distinguish with the glass the serves brails of the river as far as Niceian. On descending, I impressed on the Commission the necessity of two people making the ascent, one of whom should be the chief directing the operations. There reps are useless.

A few days after, the Government Committee guested in Brevet-Captain commanding the Arestatic Corps in the Artillery-service stateded to the General Staff. I revived at the same time orders to expanse or company of thirty men, including a captain, licetenant, ensign, and non-commissioned officers, the sergeant-major to act as paymanter, and to proceed to Mantheeps without delay.

The eighth day I left with an officer, after giving the directions to the few soldiers I could collect to start for Maubener.

Mauberge.

Arrived at Manberge, my first care was to select the spot, construct the kiln, find firewood, and arrange

everything, whilst awaiting the arrival of the acrostat I had tried at Meudon.

The different branches of the service have we below to regred soldiers, who were not apparently of the surp, and of whose on the year signature. The Germal commanding at Marslerge ordered a state is be made on the Antrinas intronched within probable of the pines. I sade to be employed with any troops in this attack. Two of naise was enveryly seconds, and the employes environ. If the first of the side is the surpress of a definer of the array of the probable of the second was all the first of the side in the surpress of the probable of the side is the surpress of the side is the surpress of the side is the surpress of the probable of the side is the surpress of the side is the surpress of the side is a surpress of the side is a surpress of the side is causing the work of the side is a surpress of the side is the side of the side is causing the work of the side is the side of the side is causing the work of the side is the side of the

We observed his daily progress, till, on the fifth day, a 17-pounder, masked in a ravine within easy distance, fired at the bulloon as soon as it rose above the ramparts. The ball passed over our heads, the second was so near I thought the arrotat was recrited, and the third fell below us.

When I gave the signal to haul down, my company did it with such vigour, that only two more shots could be fired; next morning the piece was no longer in position.

Occupied during twenty days with incosant work, night and day, from the number of observation, nothing see prepared for carrying seen high and deletion cupingsover rampares and dichos, and enter on a camping in precious an order at middely to preced next day to Charleroi, a distance of twenty-four miles by the road I should have to follow to avoid the narrow stress of the village.

Experience had shown me that it required both force and dexterity to resist the wind and prepare for gusts.



FRENCH WAR-BALLOON

I employed the night in arranging twenty ropes around the equator of the netting, which I made as firm as possible (see figure on page 281), and to each of noy men I gave a rope, which he was to tighten or loosen according to signal. We started at daybresh, possing close to the enemy a videttes.

I kept the balloon at such a height that the cavalry and military equipage could pass underneath the car; my men holding the ropes marched on either side of the road.

The our contained two ropes for amenion, a large salleduch that arred to keep the balloon on the ground during the sight one faying, also to keep the balloon when the wind was to strong; sowe pickets, under pickates, with necks and signals. The balloon could raise in eadn any weight under few hundred possible; so I couried in my are from to to twenty possible of and, and diminished the weight according to the wind, or the void if a gent surprised nose. At Mauleeges a gost carried nose on the point of a church-spite; but a bag of mad, of the weight of twenty possible, there are produced to the point of the produced produced to the point of a church-spite; but a bag of mad, of the weight of twenty possible, there appliedly our, consend not twice alone tile.

After making a recommissionee on the road we arrived at Charleroi at sunset, I had time before dark to remove the place with a General officer. The next day I made a second recommissione in the plain of Junnet, and the following day the accusate was in observation with a General officer from seven to eight host

At a rs. (the attack had commenced at 3.30 s.s.). General Journan ordered me to rise and observe a point be noticed in his plan; while I was unking the observation with an officer in any company (there being no Staff officer at the General's disposal), a battalian passed between the ropes of the balloon, and I heard several say in joke that they were besting a retrort, and a role, "If we are basting a retreat the balloon will not long be there." Many Autrinic officer, who were at the battle of Flergam, have subsequently sowerine that many shots

were fired at the bulloon. After a few more reconnaisonness we followed the movements of the army.

Near the heights of Namur a gust carried the balloon against a tree and toro it. I returned to Mauberge, a distance of twenty-four miles, and when the new balloon arrived I filled it.

After many more reconsistences with the Generals who communited the different copy of carries, we crossed belowe by but and directed our concer for frames. He ras a see indested savable as at the gains of that town: a gust of sixel corried the ballous against a stack of wood, and algority tow its lower homisplane; but little goseque, or I extend the Vark, and with a repeated as freely which was respected by the extress repetators. The socidest was there required, and I repired the same on the fourth day. Afterwards, at Beavite, mar Aicksle-Outplets, a separent of some north allowed on these to construct a new kills, which I had hadly completed by Daries to firm as econd company, which I was ordered to conduct to the army of the Bhite, where the recommissiones be and the name second.

The Generals and officers of the Austrian army failed not to admire this method of observing them, which by said was an ingention as it was boll; and I received the most bearty outgratulations whenever I was with them. "It is only Fracchasen," they reported, "who are capable of imagining and executing such an enterprise;" when I told them they could do as much.

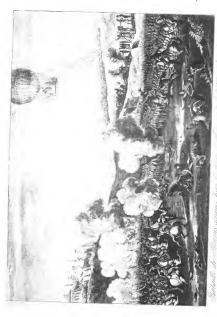
I review the order to reconsistive Mayeron, and I pooled agostly factors on our lines and the place, within ony distance of tie, gent, it we mid was strang, and to offer mere resistant er low about, with a distantiant in any forward of two lumberd permich. I was at more than two lumberd and thirty years from the geomet, when these reconsive spullak looked not the ground with make free their many of these bent the strengthens the bestdomet flow or were broken. On each occusion the halloon now with order for each policity dust thirty was now a wide broken.

The enemy did not fire. A General and some of the Staff came out of the town, waving white buildberhickly, which I signalish to our bandquarters, and our General word not to next them. When they next, the Amtrian General and, "Manieter le Girlott, je was demonde on gride of faire decreade or bears affects; be warf or le paire price; if we found my affect and existent for accelerate times per la speece; et an one que affect the me that if Manleyers.

The wind fell. I was oble to ascend again, and on this occasion without glass I could count the cannon on the ramparts, and see the people walking in the streets.\*

The enemy's soldiers, when they was some one observing all they did, were discouraged by the thought that each novement was remarked; our soldiers, on the other hand, found now courage from what excited both their administion and their confidence. In our tolkome marches none of my corps could be allowed to leave the topols,

<sup>\*</sup> See pote in Appendix of the use of a balloon in the passage of the Rappahanneck, 1863. An extract from Colonel Macdongall's 'Modern Wardner.'



and so it happened that we found refreshments prepared for us, and frequently the light infantry soldiers brought us wine.

We were excumped before Mannheim, on the banks of the filling, when the General in commonal ordered me or cross over with a flag of truce. As soon as the American officer knew that I was in command of the servasta, I awas overwhealted with questions and compliments. "Musicar Hapinar Meira," and a napriest officer, "let admirishes sureal houser in detailet at la femmory row sorie trails are distinction. Cut not qui was at apprix at signals is permit, peaked the latellit of Experim, a firm Calvare, due in in Educh-comm.

I observed to him that I ought not according to custom, to be prohibited from entering the fortrees, as I could by rising on the other bank survey the whole. The General in command sent me leave next day to see the place, if I had ny General's cussent.

The recking is troublescon, and increases with the force of the wind, and sometimes prevents the use of glasses; but I make trouble that cone me the movements of infinity, cavelyr, and artillary with the nabel of each and at Manberg, Mayanon, and Manaheim I could count the pieces on the redoubts and ramparts without any extransors assignation.

One has also to accustom consect for the robes the hallow makes after the viral has blaven one side conver, and it assores again with rapidity in plathatic resp. from the clustery of the gas. I can see aware of any exclusion from this convers. During one reconstituence on the bashes of the Binke, again scient see for the first time, followed by a visited recept, reduced which I mostly died at Planck-studal, where I had is like. My identicant took command of any company, and passed the Binke: on the first night it was tern and rendered across. The aerosate constanted by Capital Hammond ( $\alpha$  Nr. I Company of the Aerosatic Copyal, I have many able and allowed and company to descend at Eurochristicin, was riddled by bullets now Frankfort. This company were made principer or war at Wartsherg, in Promonda, and their joind the repullition to Egypt.

Being obliged to take sick-leave, I was hardly convalescent when I returned to Paris. I was raised to the rank of "thef do Bataillon," and continued my duties at Meudon.

All the movements of an aerostatic corps should be done in silence. The correspondence is effected by signals attached to the sides of the ear, and was devised by Conté, director of the aerostatic establishment at Meudon; the aerisal observers being instructed by signals stretched on the ground.

### EXTRACT OF A REPORT OF FOURCHOT TO THE CONVENTION NATIONALE (1795).

One of the discoveries which has had the most attending effects, and strikes the insegnation by the potition in given to man, by raining his on the winger of the whigh, it has reactive meshels, which be increased here also been worth a docuntion since become thickness by your lawe, but the discovery of which has always reviered the homoget of your words, and has since become for your Committee now inframement of www. Wish one excensive wave recognized as the piecers to victory. The Convention will learn with interest that many assue have devoded the measured or allowed sately to perfecting the set of executation, and a render of even you in camp forteness and even on the shorter of war. Their researches have funished a new means to produce at little cost, and with materials that are suitered, the light distill that the repulse errors the specific specific and only light distributed, the light distill that the repulse errors the specific specific distributed in the proof distributed as the proof of the proof of the proof of the proof distributed as the proof of th

Their foreight has caused them to take advantage of the latest mechanical discoveries, and also of those importanents in numbelicure that enable silk to be made at Lyons of quality hitherto unknown, combining lightness with strength. The Aerostatic Corp has many companies; new measourers for the regular service of those new instruments of war have been devised, and the Hepshile possesses at this time a new Institution that thirts four accords have already consulted our escenies to adjace; without having veloce has been instituted in thirts four accords there already consulted our escenies to adjace; without having veloce has been instituted.

The Committee are occupied increastably with the necessary measures for multiplying these presences or instear, and soon all or areales will have complete accreated compunions, with twarts and regings which will be as accounty to them as parks of artillery. Their construction is now being pushed neightly forward, and young citizens from the millitary school are instructed in the manners necessary for millitary secretaries. All will soon be ready to show the exemisms of the South, like those of the North, what strength is given to Liberty by the Geniss and Art of Comisson and Commission of the South, like those of the North, what strength is given to Liberty by the Geniss and Art of Comisson and Commission of the South, like those of the North, what strength is given to Liberty by the Genisson and Art of Comission and Art of Comission and Commission and Commission

The following is an extract from a 'Mémoire' published in l'An X. (1803), by M. Lomet, on the use of balloons for topography as well as for military reconnaissance:—

Accostate afford at will, in presence of the enemy, one or many points of observation, from whence one may reconstruct the position he occupies, study his movements, judge of his numbers, and perceive the smallest details in his manuscript.

One may conclude that these machines will become of indispensable me in war, as they have there established a mellock, till recently unknown of gathering these observations that can instantaneously determine the success of the buttle, at the dispositions for a vigorous defence, or at least make known the favourable messent for retreat. To recall to mind the use that can be drawn from serestate by the suny, I need only mention the happy experiment on the field of Fleurus.

The Committee of Public Safety, and after them, the Executive Directory, thought the use of accusata for military reconsistences should be studied and practiced in time of poscs. They desired also their employment in the construction of geographical maps, or at loot, in filling in the intermediate cleanly of surface between points geometrically determined. Ordered to make experiments relative to these various uses, I give an account of the claff results—

On according, the account's first object to to measure the angles between the different prints on the ground. It is cannot be done with the the collists, a second of the morths; a tractor instrument, unspended like a maintain's compan, was next tried. It was expected to measure not only the angles from the centre, but also the indiminist with the horizon; it till of no thorever succeed, so the waterint was risted. This instrument is not high the collists to be desired, not only for the celevity, but also for the facility and precision of the observation; but it has this distributed in the price is included on the major with the below.

In military reconsissance, however, and other maps, in which the outline of the surface suffices, simply observations with the extent are except, as it from inshes the means of easily taking in a great extent of compty but it is not the same with observations that require more exactions, in which it is necessary to know the inclination of the angles from the boritons are well as from the centre.

This is how I have endeavoured to accomplish these requisites.

The intertune-ut, arranged as we have described, has produced in our experiments all the effect that could be extracted. This investion is a simple as it is necessful.

In conclusion, M. Lomet states that much experience is necessary, and that the art of nerostation considines properties as valuable as they are undeniable for the use of topography and military reconnaissance; that its improvement may cause new and unthoughted benefit to other sciences; and that it would also be impolitic to neglect these machines, or not to throw all the light derived from meditation and experiment upon them.

We out our necessive with a neutral on their military use. The enemy will not full to oppose to the creative industry of Pierces as obtainty of institutes, if we also will have their executest and necessities coups." The influence of this innecessition to war is of a kind that is rapidly developed, and non it will not be exclusively in favour of any nature, both the set of constation will then have acquired a more growed interest, become that time it will these become one now element in the hands of most for opposing breats force with genins and industry. This cause should therefore excited all the feeding of the manualty to all its improvement.

Two of Colonel Coutelle's balloons may still (1856) be seen, the one in the Kaiserliches Zeughaus, in Vienna, and the other in the riding-school at Metz.

An instance occurred in 1815, when, or convirus, Wowen, the destination of this vileged markins was to lower curve the Pracel. Previous clauser found in the Carde of Vermond in layer certaint, in crusp is unifer out in click and othergy him by a densor of high backing many theorem I percels of grapewider, which was to have a face. Several attempts was made to mise it, but without me, book marked as pour laws. Generally all the first prace which the resign was to be inveited actions. "This prace, was follows was reconstructed, by command of Alexandors, where the Western Pracel of the Experimental Conference of the Computer Conference of the Conference

Many of the Austrian soldiers at Fleurus said, "How can we fight against these republicans, who, out of reach, see all that passes beneath?"

Carlyle has given a humorous description of this scene. "Haugs there not in beaven's vault scane predigg acen by Austrian eyes and Austrian spyeghases, in the similitohe of an enormous wind-lag? . . . . By Heaven! answer spy-glasses, it is a Montgolfière, a belloon, and they are making signals! Austrian cunnon lattery barks at this Montgolfière, harmless as dog at the moon."

Najoloon did not, however, give this branch of the service much encouragement; for, after making use of them in Egypt, he allowed the Munden establishment to exist without support till 1892 or 1894, and then abolished it. The French historian of scroatation (Depuis Delecont) says that he had an antipathy to it ever since the remarkable onean this coronation. An attempt was made to revenue this corps in the African campaign of 1830, but no opportunity occurred for fix use. The Austrians are said to have camplyout reconnectring halloons before Venice, in 1849, and the Russians in observing from Schastopol.

The following is an extract from the 'Royal Engineers' Papers, 'vol. xii., New Scries, or On the Uses of Balleons in Military Operations," by Lieut. G. Grover, R.E., read at Chatham, 23rd April, 1862:—

The supports no reason, knower, why hallooss should not be used at molecule cleavation to coolsi reconstruction of the control production of the recognition of the control production of the control production control in the same control production of the control production of t

Sir William Reid writes, "An halloose were successfully used more than sixty years back by a French army, they may perhaps be made of some use in the Crimes just now. To raise an observer even 200 or 200 feet above a fortifield position sight enable sensitiants to form more correct ideas on inner intreachments than when only viewing such a position from a height of equal altitude."

On the same day that the above letter was written by Sir William Reid, a similar proposition was made by War Shepherd, C.E., who designed the allows and their inflating apparatus used during the search for Sir John Franklin's expedition. He states that he "can fit up a portable apparatus which will fill a balloon in about an hour, capable of taking up one man to a height of 600 or 700 feet, with rope to pull him down smin."

Though the principle of these schemes was highly approved of by the officers to whom they were referred, and though similar propositions have been repeatedly made since that time, it is hardly necessary to mention that that looss have hildren never been used for military purposes in the British service. Their absence from our field outpingons it is probably more attributable to an over-satinate of their defects, than to a non-appreciation of their datastages in military oversition. If thou defects are loss erious than is generally sproposed, I trust to be able

<sup>•</sup> Naja-Greent Money, in a pumphet addressed to the light theoreusled. Cardler Forks, London, 1982, uspra—"There are few mon, 80; in this country who know better than nayed relat me can be made of believes in military consultans, having been three

to demonstrate in a future portion of this paper; but it is first proposed to examine the experience afforded from pust tests of the see of balleons in actual warfare, so as to accretain whether failure of precedents can be assigned as the reason for their not having been hitherto adopted in the British service.

As strongt was made to review them in the African compaign of 1978, but there was no opportunity for making use of them. The American are and to been employed necessitivity altimose there visice is 1878, and the Bonsians is observing from Schoolspel. The French again mole use of them in the late Italian compaign of 1978, but this time the newlet was men and from 1978, but the series was in a deeper of civilian assemants, the 310 Global. Account were made from the late of 1978 of 1978, and the series was a few series of the series was a few series of the 1978 of 1978 of 1978. The theorem of 1978 of 1

The French reconnaissances in Italy do not seem to have effected any very great success, apparently in consequence of some official blumlers or mismanagement. M. Prevet, who was commissioned as the Emperor's standardore to organize the military balloon-service for the French army in Italy, applied to the aeronants Godard for their assistance in the undertaking. Though they were anxious to construct a war-halloon especially adapted to the requirements of the service, yet (according to their own account) the mendatairs, who wished to use as little as possible of the 50,000 frames with which he had been supplied for the necessary expenses, desired them to set out at once with such simple apparatus as they happened to have by them. However, the experiments they conducted at Milan induced the Emperor to order the construction of a regular war-balloon, and in the mean time the Montgolfière in the percental procession accommunied the army. It was this bull-on which made the ascent from Marshal M'Mahon's hood-quarters at Castiglione on the day hefore the buttle of Solferino, and (as the Godards express it) the results were quite insignificant, though the moral effect spon the troops was great. It is probable that Marshal M'Mahon would have been better pleased with less moral effect and more tangible realities; the actual war-balloon only arrived at Solferino when the articles of peace were being signed. This machine appears to be well adapted to the purpose for which it was made, and it is unfortunate that no opportunity was afforded for a practical test of its utility in the field. It is made of silk, holds about 30,000 cubic feet of gas, has buoyant nower sufficient to raise three men to an altitude of from 1000 to 1200 feet, will retain its gas for a whole month, and photographs have been often taken from it on a calm day by M. Nadar. It can be inflated in one hour by the ordinary illuminating gas (carburetted hydrogen) when near a town, and in the same way by hydrogen manufactured from a special apparatus for field service. After being inflated at Milan, it was moved to Gorgonzola, a distance of tweaty miles. and it then remained for two-days at the artillery park without suffering any perceptible loss of gas. These details have been supplied me by the MM. Godard themselves, to whose courtesy I am indebted for much information on the subject generally.

One of the nort interesting point of consideration with reforms to the employment of milliony bulloon is the operation excessing the respective neutron for the purpose, of Managingillion (made heldings), or Challions; gain infined bulloon). The French recognition of the Challions was made from a Managingillion, on his barded, but the 30th (closels, when much the second, and have prescribed youth of his cuttice), express a strange splains against this species of hallow. Without a combone frames in the series will remain antionary in the series of the contract of the co

diameter of sixty feet, the contents being upwards of 113,000 cabic feet. At the same time they consider it infinitely preferable for military purposes to the Charlière. A report on the subject by Licutenant-Colonel Baron Elmer, of the Imperial Engineer Staff, thus specifies what he conceives to be the six necessary conditions of the warballoon service:-Ist. The balloon should be able to make an ascent soon after the order has been received. It would be of little use in the field if the preparations necessarily occupied half or even a whole day. 2nd. The ascent should not be prevented by a wind of average force (about 1 lb. upon the square foot). A free ascent is then out of the question, since the slightest breeze would drive the balloon from the place where it is wauted to observe. 3rd. An average height of 100 klafter (622 feet) may be assumed as the proper altitude, which is limited in the case where the balloon is attached to the ground, by the weight of the retaining rope. At this height a surface of ground of about twelve miles dismeter (forty miles English) can be distinctly examined with a good field-glass. 4th. The number of persons making the ascent should be two at least. Only in the company of an experienced aeronaut is it possible for an officer to make a reconnaissance with the proper confidence. There is always danger of a sudden gust of wind or a bullet from the enemy tearing asunder the rope that retains the balbon, and thus changing its captive state into one of freedom; one at least, therefore, of the persons making the ascent should be fully capable of managing a balloon thus liberated. A trustworthy and experienced aeronant is, therefore, an essential condition of the whole undertaking. 5th. The balloon should be in telegraphic communication with the ground, since it would take too much time to send written questions and answers up and down the retaining ropes. Hence two skilled telegraphists must be employed during the reconnaissance. 6th. Ascents should finally be practicable at any given spot, and as often as required. And these conditions, Baron Ebner considers, would not be properly fulfilled by the cupleyment of Charlières, or gas-inflated bullians. The production of sufficient bydrogen by the action of sulphnrie acid upon zinc or iron would be a complicated, unsafe, costly, and dilatory operation. Even the conveyance of bydrogen in a compressed state would be objectionable, since (if it were compressed to one-twentieth its ordinary volume) the metal casks would require at least 800 cubic feet of contents, and they must be strong enough to resist a pressure of twenty atmospheres. In this case there would be a saving in time, but a very considerable increase in expense.

No notice seems to have been taken by the Austrians of another method of generaling hydrogen, viz., by pumping states over red-best durated or low-turnings, but they have relictedly deviced, so for as theory pose, in favour of Menigolifers as the proper species of hallows for military services. For the inflation, however, they propose leaf air judge or of the number of states, word, die, as not by the first necessaries. For the purpose the size of the species of the surface of states, word, die, as not by the first necessaries into this the size of the species of the surface of the surface of the surface of the best of the best of the best of a state or the surface of the

The more then that we examine the investigations into the onlight that have been conducted by foreign officers, the more do we bears, and y shet hat her made, but of what her at low due; i.e. the more do we have convinced that there has not been yet discovered a satisfactory system of military ballooning, one fit (that is to say) to satisfy all the relation exispension of actual warfare.

The most recent instance of a successful bulbon secret for the purpose of military recommissance (conduced by the Federal America at Island, No. 10) them noted by the "Time" of April 14, 18 192— A bulbon recent assessment was made on the 27th Nurch by Professer Streim, excompaned by Colonie Basical and Captain Magnadier, which contained not be forth at affeits but be ent them at the open at mage to be sufficiently effective against the Carlodorate butteries. This detect in next-apentic has since been recorded. According to a subsequent of the contraction of

Mr. Curwell a "Mannood: "Rillion, probably the largest called fort of gas, bring a Boughtsida disserter 60 fort, on a Charlier over contention, to 60 fest in organizated disserter 40 fort. It can make 600 fest, only 50 fest in transverse disserter, to 16 composed of 60 grees, only organizated disserter 40 fort. It can make 600 fest, forther 50 fest, the same 600 fest, forther 50 fest, the same 600 fest, forther 50 fest, and forther 60 fest, an

- The following are some of the objections most frequently urged against such a practical application of them:—
- 1st. The chance of their being struck by the enemy's projectiles, and caused to fall suddenly in consequence of the escape of gas through the holes thus formed in the nilk bag.
- of the escape of gas intrough the notes than cornect in the sale cog.

  2nd. The size, weight, and consequent difficulty of transport attendant upon balloons with sufficient bacyant
  power to admit of their being attached to the earth by guy-rapes.
  - 3rd. The difficulty of providing gas for their inflation when in the field.

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- 4th. The difficulty of attaching to the array experienced aeronauts for the purpose of inflating the balloon, regulating its ascents and newtments in the air, and taking general charge of it on service.
- 5th. The danger incidental to balloon ascents in general, even when undertaken by experienced and professional acronauts.
- L. In amove to the first of those objections, it may be stated that, even supposing the balloon to come within range of the energy for, in the sector upon bing urried void and to reflected a binatamously or employed upon gamerally immediad. When the great Nomen halloon fell into the sea near Shermens, in 1900, sixty remain of hallo carriedge had to be first duried the left great produced in the size by the energy day; so had below halled possing right through the halloon, and thus forming two holes in the large. If it was struck by shot below the best of the great call halloon see which neederfoly fully of come not the highest of the would be produced, and anythout it is apprehensed that wherever the hale be forced, the thinks see would need to such that the long the entire the suppose power to reprove the force until a phonous of the suppose. And the suppose the suppose the suppose the suppose the suppose the first because the suppose the first because the suppose the suppose the suppose the suppose the suppose the suppose that the begath of groups were sufficient for this purpose, and in all peakability there would be few contains in a canaging when it would be recommon to a suppose the submarried reproductions.
- 2. The size of the hallond shyecht of course spore two conditions—the nature of the gas with which it is initiated, and the weight is the to lift. A sheem has been absord absord ablied to in this paper, which proposed to employ a ballon to describ conscising officers to a height of 100 feet. To support one retaining rapes of this benegate, a ballon a very feet in distance would be requisite; but for (in a inproad in this paper) as electrated such as the property and the property as electrated as such joint to low feet the considered sufficients, is hallon with distance of about twenty-eight feet will be found in which his distances in colculated for the proper according power will be deemed distanced, but with risk-case to the pertailing of the mechanics in any her reasorbant that the whole apparents together with that for the generation flags, once old the engly conveyt on a single Field Train wages.
- 3. A specific gravity ose-sixt that of atmospheric air has been altered for the hybridgen to infants the hallon time specific gravity, when privety perm, being about one ofinetrately). That of codings we had is usually employed in ordinary billion assertion is of the purpose are strongly abstrated in ordinary billion assertion is the structure of the purpose are strongly abstrated by the manterer arreases. If Me Mark Mason, in the Atmospheric is consequence of "the general readerly of the particle of hybridgen, and the stronger stimity which they called for those of the surrounding insequence." In facilities of the structure of the surrounding insequence." In facilities of the surrounding insequence of all the survival to a considered. Underloaded the quicked manner of design see would be abstract in §4 the action of dillion employers of anything about heavy quantities of sulphoriz soil is not gravan, that another another is profession. The French versides playings for their wave allowed by possing stamm over red-host invastratings, but probably an improvement would be effected in this process. In the action of the contracting of the probably as improvement would be effected in this process, the stamp design to provide a structure of the contracting of the process of the structure of the interiesting that the interies of the their structure is the interiest after the twice stategy that is therefore of the basis of the interiesting of the interiesting of the structure of the structure of the interiesting of the interie

\* For, since the rates of diffusion of grave vary invenely as the H 53°2 vols Co 403 .. sugger poots of their densities-Co. 65 . Therefore, the diffusive power of end gas : diffusive power of Mr. Bloman, of King's College, informs me that by passing steam :: 4000: 445 over red-lest coke in an iron tube whose interior had been previously 255 : exidised by a current of steam; he obtained a gus composed of 1 : 2 627 H 81-6 vola Co 84 .. † The production of hydrogen in large quantities by this process Co, 100 ..

is described by the French chemics, M. Deville, in the 'Annales da' but even this gas folione being purified' would have a specific Chinale et de l'hysique,' for January, 1861, but kie gas contained gravity almost double that required for the present purpose.

well existed by a current of stores; the characteristic several divisation, is being only to obtain in well-wooldcountries and requires a lever degree of their in other to present the formation of suchasion cities. After the predestron of the gas, it would lake to be particle by lims from any taint of carbonic sell gas, and it must be properly roods before exceiting the hallow. Without experience, it is almost tapeopolish for many delistic sellor of the time which would be occupied by this process in the production of go as in sufficient quantities, but it is placed to the contribution of the cont

- 4. For the management of the balloon about for or six Supers would probably be sufficient, awing been perviously instructed in all the precisal closule seconcy for the service, such as the subside of printing against the property of th
- As The sordests that constantly larges in hallom ascents are strictlesthic mainly to the negligence and fifty of the owners. The exceedage of the class, for the sole of comount, constructed of text instant of silk, and this material (not being very damale in the first instance, and still neare washed afterwards by the action of the varnial and pay were const after a few assessment, much the sightest strain on the behavior to the constant of t

However, the percentage of socidents is excessively low in proportion to the number of halloon seconts much. It is conceived, therefore, that execute mercal superintendence and examination should entirely preclude the possibility of any accident in the use of military halloons; and, as an instance of what proper care and attention will effect, it may be mentioned that the two accounts, Moson, Green (fasher and son), have made between them some 550 searchs, in mose of which have they are with any perions accelent or failure.

In the consideration of the proper size, nature, do, of a helloon if for reconstring purposes, the wind may be assumed to centre the same pensure upon the hellons as it would upon a circle of similar disaster; for eight theoretically a solid sphere presents only three-events of the resistance to the six epocar by its generating circle, yet practically, in the one of a lathon, there would not be made different on the circle of the collapses under force of the wind, and presents a fathened surface, and at the same time the service of cordings in which it is encound contact the state and tenure and the state of the collapses which it is encound contact the state and tenure and the state and the service of the collapses of the state of the collapses of the state of

Balloon also are usually constructed of a poor shape (having the longitudinal axis about one-sixth greater than the transverse, in that the netwer may be peoply shipted upon it, and concapently the surface presented to the action of the wind is acceptant larger than a beningborn. Taking these points into consists, the resistance of a plane circle tower-people for in dismoster may be allowed for, as sufficiently acceptance for all practical purposes, this dimension having bosn stated in a former portion of this paper as being sufficient for a balloon of thild all the required conditions.

<sup>•</sup> In 1835 Mr. Abel, Chemist to the War Department, designed and constructed each an apparation to generate physicoge for bulleons from sine and oil of virtical. He writes,—"Possibly the so-called watergap process, of Amerison origin, might be modified so as to yield a gas sufficiently light for infisting halloon without the accountry of very extensive semageneous." In a last, amountandom (extracts from which fit John Dingsyran was good enough to consuminate to may 1M. Abel says;—"Portichle apparation have been considered to the contract of the contr

constructed within the leaf few years for the production of +id or roain gas for illuminating purposes, and I have little deably that some similar and efficient strangement could be contrived for generating gas reliable for balloon inflation." He also alluries to the perfection of Whentieur's netherlo of ungreate telegraphy as being applicable to the consumination of indivination from ag-

The area of this circle being 615‡ square feet, the following Table shows the pressure it would have to sustain from different winds:---

### Volunity Perpendicular fuque Prevance on a hallon per hour. on 1 og. ft. 2n ft. in diameter.

A.D. 1862.

Gentle, pleasant	wi	be	 		 5		123		75-73	
Brisk gale			 	**	 10	** **	450		302-93	
Very Lessk			 	**	 20	** **	1968	** **	121180	
High wind										
Very bigh wind			 		 40		7:873		4847-82	

One-inch round wire-repes might be employed with advantage as gay-ropes to retain the balloon to the carts, since they correspond in strength to the 24-inch hemp-repos, and weigh exactly half as much. The breaking strain of this rope being two tons, its safe working power may be taken at half this weight or esse

Consequently, reprosing there to be two gays-page, and Mo feet long (in allow feet incorre and infellments actually the beginning of the hallon develoal between the two, as the weight of each new would be about 12 like, we have 250 like on the total available resisting from t against the pressure of the wind upon both hallon and gay-pages, a deeper of strength uniform to breast even a wind belowing at the rate of thirty males as how. At this is considered the maximum velocity of wind in which a captive hallon can be safely used for observation of the conveyance of the velocat racking and engaging of the early, there can be little about that these propages would be sufficiently strong for their purpose. The following Table, then, details the weights to be lifted—

And as the 2%-feet balloon may be considered as a sphem, for the gas soldom fills the lower portion, is exhibited contents may be taken at 11-949 ethic feet; and if inflated with hydrogen cone-sists the weight the surrounding air, the accessional force will be 11-948 x 25.5 = 718 lbs, (as 1000 ethic feet of air weight about 7.5 lbs, and consequently the balloon would like with an accession recovery of 18-95.

The above calculation of the satisfied size for a reconsciring-halicon has of course been made upon the apposition that hydrogen is obstands from the proceed gas-sparsate with a degree of purity equal to a specific gravity of one-sixth. This could be only definitely determined by experiments, whose results might peasibly modify the above figurest, though not, it is matirity-atc. to any very considerable extent.

The balloon itself should be constructed of silk, and payed over with an elastic varnish. Cotton is sometimes used instead of silk, being less expensive, but it is not so durable, and soon wears out from the action of the gas

<sup>\*</sup> It has been elejected that this is too like-oil an estimate of the two-thing hold on knew-time rope, in proposition to the breaking strant. B is the usual allowance to make for hempen sepes, but Morras, Neveall and Co., the positione of the invoceime repos, allow only one-stitch in consequence of the uncertainty attacked to the vacility of term, which commot be refull upon, being adobts preferrly homogeneous. Furthering, however, in treating of long globes, perfectly homogeneous. Furthering, however, in treating of long globes, i. Since (now p. 2 (1 ton ~ 2 (2) time).

<sup>= 2 :2240</sup> Re. -- 92 Re.)

<sup>3.</sup> This according power would be sufficient for ealm weather, but must evidently be increased (by diminishing the weight or other means, in preportion to the strength of the wind. For the pressure of a strong wind upon the believe would obviously face the mys or annet out of the perpositionary, that the hallow would stan a very

slight sireation without emidle-mile loopsust power and a great struct of eyes. Supposing 4.5 is be the measurem annels to be better than the supposition of the supposition of the thic case according power must a force of ward, and (detain or supply 1.2 fifteen of wind, <sup>2</sup>. The payages probably described an of considerable attength, cliebtly in order to result the volctor and or the supposition of the supposition of the supposition of above was written, an accornal has appeared in the "Times" (of April 201s) of an accident happening to accornance to the breaking of monitoring hallows, at Vivolence, in consequence of the breaking of

ropes of even an excousive strength.

5 A still balloon of the above dimensions, with all its accessories emplote, would cost about 256L. A cotten one would probably not cost one-third this sum.

and varnish. It entsils also a considerable loss of ascending power, being in itself heavier than silk, and requiring about double the quantity of varnish, which increases its weight; besides, the subtle nature of hydrogen gas renders it advisable to use a material of a closer texture than cotton.

As the balloon is to be used for reconnoitring, the colour of the silk should be such as to render it invisible at a distance. Grey is the best for this purpose, but as the varnish would turn it almost black, it would be advisable to employ a white silk, and the varnish would then render it of a light-brown colour. Experiment alone can, however, determine upon many important points connected with the balloon-service, such as-

Istly. The most desirable arrangement of the gas-generating apparatus, and the quality as well as the quantity of gas which it would evelve in a given time.

2ndly. The best way of attaching a balloon to the earth, and of managing the gay-ropes.

3rdly. The resistance offered to the wind by the captive balloon and its retaining ropes.

4thly. The greatest velocity of wind in which a balloon can be safely retained to the earth and conveniently used for reconneitring.

In conclusion. I would briefly recapitulate the different heads of the subject upon which this report has treated. It firstly enumerated the various propositions which have been from time to time entertained for the employment of balloons for military purposes; these having been considered and reduced to one (that of reconnoistring), the various instances were described of their setual use in this capacity, and their employment in the English service advocated on the supposition that they would be found of similar utility to our armies.\* The most customary objections to then were then considered, an inquiry made into the description of balloon best suited for the purpose, and those experiments noticed which appeared most necessary to ensure their efficiency and success.

I now add a Paper from the same volume, "On Balloon Reconnaissances as practised by the American Army," by Captain F. Beaumout, R.E., read at Chatham, 14th November, 1862 :---

I have been asked to give some account of my ballooning experiences in the States of America, and I do so the more readily-firstly, because I believe that the art, even as it at present stands is canable of being Preliminary turned to practical account; and a-condly, because the practice of ballooning, with reference to military manneuvres, being so little known, any remarks on the subject based on actual experience must, from that cause alone, he of some value; the nature of the art, moreover, is such that, to form a just appreciation of its applicability, one must turn. I may say entirely, to the results of experience on the subject, rather than to theoretical considerations connected with it. Lientenant Grover's paper, which I have read, for all practical purposes exhausts the theory of ballooning; as, indeed, after having compared the specific gravity of the atmosphere within and without the balloon, and referred the result to the work to be done, there is little more to be said; always hearing in mind that to be on the safe side it is well to allow, for various reasons, a considerable excess of buoyancy over the weight to be lifted; the difference being made up with ballast adjustable at pleasure. In the case of a free ascession this is absolutely necessary, and circumstances may, at any time, render it imperative, even on a reconnaissance, to cut nway the guys that hold the balloon to the earth. In the remarks I have to make I shall. therefore, with the exception of a few notes on details, at the end of this paper, confine myself to an account of the apparatus used by the Americans, and my own experiences in connexion with the reconnaissances I made.

There were two sizes of halkons used: one of small size, with a capacity of 13,000 cubic feet, corresponding Approxa to that twenty-eight feet in diameter, mentioned by Lieutenant Grover as suitable for the general pur-Apparatus. posses of a reconnaissance; and the other of about double this size. This 13,000 cubic feet gives about thirty feet as the diameter of the corresponding sphere; and to fulfil the requirements properly laid down by Lieutenaut Grover, this is not too much. In practice he would find that his calculations—on the assumption that two people

<sup>·</sup> It is due to Mr. Coxwell to state that, throughout his acronautic eareer of twenty years' standing, he has stoodfastly advocated the andorment of balloons for military as well as orientific purposes. His Letters in the Timer on this subject, and his ascents in 1854, as a medal and practicable operation.

when he invested and used his telegraphic war-signels, sufficiently attest his real in this branch of accostation. In his lectures as writings Mr. Coxwell has constantly spoken of nerial recommissance

were to be lifted—would as a tiller sufficient loopurage, for the following reasons: No allowance is made for ballant; there is place of two pay open should be soon, and they should be 1000 for leng at shot, as that is by no means an unconverge phenciation between the provise for. The larger sized balloon was, however, the near that the Americana decidedly as the state of the sta



AHLBICAN WAR-BALLOON,

The billions were made of the best and fixed description of all, double sews, and prepared with the greatest below.

— extra the ansumist of the balloon constaining the great where being made of their threes or fixed fields of some office in terror fixed or fixed the second of the approxima much depends was severed Mr. Loe's, the older formats; it is allialized kept in their gas some office and the second of the approximation much depends was severed Mr. Loe's, the older formats; it is allialized kept in their gas always a small moment of balage, will not the end of a formight sufficient gas manned in the balloon should be found to another the source of the second to the source of the second to the source of the second be found to amove the purpose was will in the second to found to amove the purpose was will be second to found to amove the purpose was will be the second to found to amove the purpose was will be the second to found to amove the purpose was will be the second to found to amove the purpose was will be the second to found to amove the purpose was will be the second to found to amove the purpose was will be the second to found to amove the purpose was the second to the secon

ca. The senterwork or, the ring being about level with a presents chest when standing optight in the car.

The string for warking the valve possed through the cutter of the allowa, and coming out at the tail was loosely tied to the ring, to which were fastested the gays, three in number; thus the cur, though awayed about the notion of the balloon, hong always marrly verifically be senth it.

The case generators two in number, were nothing mover than large tunks of wood, acid arrof finishe, and of

the per governors were measured to the property of the past of the past they were provided with available supposed for formers, affected interrupt to resist the expansive action of the past they were provided with available supposed for regulating the admission of the gas and with number covers for introducing the necessary materials. The gas need well pulpages, and indeed for partical purposes, all things considered there is none other that is nonly so writishly; its low specific gravity makes it a non-pain so for a military excessor, as, independently of the cose with which it is produced, when a blanch on a startled to the earth, it is do that fine upstrange that it is should

offer as little resistance to the air as possible, as its atalisity depends upon this point. The hydrogen was generated by using dillute nephroric acid and inco, any old irres, such as that of the tires of wheels, add abot broken proper, was used; so that it was necessary to provide only the subpluric acid, which in large quantities is chosp, and with proper prescutions very care to carrie

The gas parameted passed through a tenthern take into a line purifier, and three in a similar mannermin to a record, the exists of the lines simply absorbing the exclosic sciled and other extrasous gass, and meaning the hydrogen quite, or very usarty, pure into the hallows. On having the generator its temperture was high, even the healthern pipe belong so not that the hand outh hardly hear to sook it, but after passing weared purifier it was delivered, bardy warm, into the balloon. The whole of the apparetts was as simple that exclude gravity causing to be said about if a

In using it, the bulleon is respected and hid in well-ordered folks on a corpet spread or the ground to review it; the thin is there placed well-of connaction with the lost printier, peoply-changed with lines and water, and the councies by budget pipes between the printier and the generator having been established, the latter is charged; even much to their as the complete the communication between the last printing and the latter of the marketing and the state of the bulleon with a clear stream of lydrogen is dothined, so as to avail ageing feel air into the markine.

Under configure given markets, in these boars from the time of the machine height allevil, it and is the state of the markine the long through the lines of the markine being included, it and is

prepared for an ascent; last this, should circumstances require is, might be shortened by employing two generators, and making a ministed heartenin in the purifying reargement. Such alternation, however, would navely be necessary, as the hallon, when build-to, can, noles in very windy worther, be very readily carried; trensfe or or thirty men by hold or code atterboth of the ring, and march doing, altering the machine to are not specifically to clear any obstacle that there may be in the way. I have frequently seen it earried than without the least difficulty.

The bollow-staff with Mrkfuln consisted of one either areasant, whose coart rank it could never quite unke set, home, but it was not bower than a coping no eligate from a templeter jet was a citized as a seconant; be was very highly pols, the same as a brigadier; as due to the military rank. It believe in, America, in means we satteded to not discremined by, the per received, I dange Professor for must have been a brigadier; at any rate he was a reverse constant of the second product of the second pro

Each regenerator required fear horses to draw it, and each balloon, with the tools, &c, four Lores. The subjunits call it is constalled becape in a carriage to fetcel, but two berows will show a sufficient quantity Costgo. of concentrated acid to hat for a long time. The nucleoneutioned is a rivens' of the balloon-corps and apparatus with General M-Cellanis army:—

Malson-Conv.

Cluff ormone.

Cupian, meticant do.,

Coylaid, meticant do.,

Coylaid, meticant do.,

Coylaid, meticant do.,

APPARATE.

Generators, drawn by 4 horners each:

distinct of the coylaid of t

would be necessary. When the machine is inflated it is kept to the ground by a series of annd-lags, which are hocked on to the network, so that they can be disengaged at a nonnear's notice; thus confined, with the sentry to guard it, the machine remains undust in any weather shorts of a very violent wind-storm, in which case it should be handed down altogether.

When it is required for an ascent, the explain and some thirty of his may get round the balloon, and carry it primation. It is appreciate jies. The weight to be lifted bringly per per into the case, it is believe it is explained as  $\lambda_{\rm cons} = \lambda_{\rm cons} = \lambda_{\rm$ 

At the time I joined McClellan's army it was encomped on the Pamunkey River, one march below the now Securises colebrated White House; it was pushing its way slowly up the Peninsula, driving the Confederates before it. The character of this part of Virginia is much the same as that of most parts of the agricultural districts of our own country, except that it is somewhat more undulating, and not nearly so highly cultivated, including woodland; perhaps not half the land is under cultivation; thus the character generally of the country is such as to render all recommissances, though the more desirable, very difficult to make. My first acquaintance with the balloon was made during the advance of the army; I had ridden forward from the main body, and joined General Stoneman's command, then occupying, for the first time, the west lank of the Chickahominy River. I found the balloon snugly ensconced in a hollow, protected from view by the bill in front. from the top of which a convenient position for an ascent was gained; the Professor's tent and those of the rest of the balloon-corps were scattered round, forming a small distinct ensumpment. I received from them great civility, and was afforded every opportunity for obtaining the information I desired. It may be thought somewhat old that such a thing as a bulloon should accompany the advance of an army, but there appeared to be no difficulty in its doing so, and, of course, it was more likely to be of use there than further to the rear. It was employed in making continual ascents, and a daily report was sent by the principal acronant to McCellian, detailing the result of his observations; of course in the event of anything very unusual being noticed a special report was made. The observer, by continual ascents, and by noting very exactly each time the position and features of the country below him, soon knows it, as it were, by heart, and a glance is sufficient to assure him that no change has taken place in the occupation of the country.

The balloon never got more than about a mile nearer to Richmond than when I first saw it; it may therefore be interesting to describe generally the position of the army, and to state what the balloon did, and what Topograit did not do. At that point the Chickalsoniny runs within about seven miles of Richmond; its nearest point is four miles and a quarter, at the village of Mechanicsville. It is in dry weather a shuggish stream, fordable at almost any place; but in wet weather it requires bridging, and semetimes, overflowing its banks, converts the valley in which it runs into a swamp a mile wide. High wooded ground horders the valley on either side, one of which was occupied by the Confederate army, with Richmond in its rear, it having retreated across the Chickahominy in front of M'Clellan's advance-guard; and the other bank by the main body of the Federals, who, with an army of one hundred thousand usen, were extended over a front some twelve miles in extent, about the centre of which the balloon was stationed. So near to Richmond, the wished-for goal, it may be well believed that the results of the balloon ascents were looked for anxiously. From them were obtained the first glimpses of the Confederate capital, the capture of which, it was hoped, would virtually put an end to the war. Independently though of curiosity, most anxious inquiries were made from the observers in the balloon, as to the difficulties that hy on the road to Richmond. Were there any fortifications round the place? Where were the camps, and for how many men? Were there any troops in movement near the present position? and many other questions of equal importance. Now these questions were difficult to answer; and even from the balloon many of them could only be replied to with more or less uncertainty. From the balloon to the Chickahominy, as the crow first, was about two miles; there on to lifethreed, eight more. At the altitude of one thousand feet in clear weather an effective range of vision of twe miles could be get; thus the ground on the opposits side of lifethround could be sevu; that is to sevu, that is to sevu; the sevu of the Canadersea could be distinguished serrounding the piace.

Looking obser the woods attent of the country prevents the possibility of spring whether it was compiced by the post on the let could be confidently searched that to kept ledy was in media. In the measure, was, we are not sening the camps reasal the place one could form a very rangle estimate of the number of men they were fix by the weak proposal to any whether there were mon in those or not. Exclusives, even at a distance of eight make, could be seen, but their densates or for each could not be distinctly stated, though one could with centrality any whether they were of the native of field are permanent works. The places in the restreated in the sales out upon the proposal country to be the contraction of the contraction o

Dring the lattic of Hancor Foorkoom, which was the fact engagement of importance below Richmond. I Beaute happened to be rise to the labor when the labor fring legon. The wind was marter light, but I was Continuous and the state of the labor was, however, best of gas, and, as the wind was high, we would plot on our down. I deev went as year, and the was the wear of the labor was, however, best of gas, and, as the wind was high, we would plot on our down. I deev went as plot appears that for laborated test means that the matter district of the worker. Be this loss was vy mattered, we made a that it was difficult to fix my sight on any particular object; at that altitude I read less suching of the fight. It turned out afterwards that the indicates was, I that ever twelve miles, which from one flowards for, and on so the right would it is country of that antire how readered he which britally, had the methods from the control of the state of the part of the state of the work of the state of the state of the state of the state of the part of the state of the s

At You Torus, where the Polenda were attenting the line of works drawns arous the Printinella, between Tarte, to be risk and James Rivers, the black are started as a particular polarity of the works could be verificated by the started of the started and particular polarity of the p

Diring the first two days of the heavy fighting by the left of the samp later licknood, which vold in Thought in Internat most her Franking, a designative sales was just the exerc and the wine just pleased constraint, the contract of the contract of the contract of the contract of the left was deadled have got to the Dibbos. Above the field of Intalty, the International Communication were librarily west, direct from the Indion Dibbos. Above the field of Intalty, the International Communication were librarily west, direct from the Indion Communication (Note: The task or, indeed, anywhere better thin to Washington, where the she sport of the state of affairs chould have been received from none to be the effort in commond of the energy. If Hollower telegraphs are to be turned into means for dividing antherity, every tree. Ashire will had upon them as well had by uniformed that the width we not all the throat of the control of the three will be and the three controls are uniform sensition, they would be askly under the count of the

Genoral Barnard, the Commanding Engineer with M-Viellan, of whom I particularly asked the question, said that he considered a halloun-apparatus as decidedly a desirable thing to have with an army; but at the same time it was one of the first incumbance that, if ablighed to part with anything be should have belind. I myself  $c_{\rm cons}$  , thick that it is a they which, if properly organized and works, may be consistingly of conclusions the constant of the conformation of the conformation of the conformation and extensings, and constant neight over when the absence of each information as the belines gives an operating of collating, could be very bettery feel. The observer from the halton might can more probably would, often amongh, have underline to report that the Gorard Idd not know; but the time, on the other bank, might conserve be the report would contain factor, a cantifactively contain one betterinsteam received, of each a sature that it would be invalinable. Nothing cought other to be accepted or condemned by its utility abone, but rather by its utility as compared with the cost of challings [1, Now, of the utility passed certain circumstances of correlatings of the contraction of the con

It may be of interest to mention that the Mr. Low referred to previously, is a nan celebrated in America.

Mr. Low. No very during measurad, the has performed the quicked planney on record, gaing by bullen from the Mr. Low. York (1 think it was) to near New Orleans, at an average rate of something like fifty or sixty miles m hour.

He is now building, and be talk as he had very morty completed, at Philidelphia, an arcital hip, with which, he intends to strong the possing of the Athanie. From the errors way in which he speck. If the conlocation is reduced by the property of the colours. He appears to the surray, and the distracted state of the country, deligh below to get in feel's a while. If the Athanie over crossed in a builder, it will be greated first by far in the shape of Athle-sing ever door, and may open a new cers in the art. The theory that he greated first by far in the shape of Athle-sing ever door, and may open a new cers in the art. The theory that he greated first had been as the state of the sta

Dr. Lew's theory respecting the direction be is Ricky to take appears correct; be in common, I belaye,  $y_{\rm crit}$  with other aeromatic, base indeed that a various direction, the aeromatic base related that a various direction, and direction. This is only probable, us a current in a fluid in one direction belones a compacting one in model.— He prescape therefore, to it where, and the finds one octing the way in which he wishes to go. These theories are somewhat visionary, and decidedly apart from the prescript question.

I shall conclude with a few remarks on the apparatus I would recommend for experimental purposes. Though for actual use I think the larger sized balloon the best, a capacity of thirteen thousand cubic feet would give sufficient buoyancy for experiment. I would alter, however, the shape of the envelope, as the one commonly used is the worst that could be devised for the purpose. In the case of a free ascent, shape matters little, as the machine must go with the wind; but when the balloon is anchored, it is of paramount importance to present the least possible surface to the action of the air. I would therefore give to the balloon a cylindrical form, and to the our a bout shape; and I believe that with the decreased resistance offered. such stability might be obtained as to allow of ascents being made in weather that, with the old shape, would preclude their being thought of. I would also have the whole of the network and the guys of silk, for the sake of lightness. Comparatively speaking, the first cost would be unimportant, and with care they would last a long time; while, if it were thought desirable, common cord might be used for ordinary ascents, and the silk ones brought out only in case of great altitude being required. A very thin wire would enable telegraphic communications to be kept up, if necessary, with the ground, and an alphabetical instrument would place the means of doing so within anybody's reach. The cost of an apparatus, perfect in every respect, would be about five hundred pounds, and one for experimental purposes might be get up for much less. The officer in charge of it would require to have practical experience; but his assistants might be men taken from the ranks, and a few hours would make them sufficiently acquainted with their duties.

The management of a balloon would seem to be a simple operation, and in perfectly colm weather, when Masser- everything goes well, so it is: but to feel confident under adverse circumstances, and to know exactly what to do, and how to do it when difficulties arise, can be the result only of experience. It has been supposed that the awaying motion of a balloon when tied to the earth would occasion a names in some people akin to sea-sickness; I do not think this would be the case (with me it certainly was not so); as, if the motion were so great, fear would in all probability overcome any other feeling, and at the same time under such circumstances it would be useless to think of observing.

I bope that the espabilities of halloons for military recomnaissances may receive a fair test with properly prepared apparatus; as, should it be saidenly required to use them, it is quite possible that want of practice would turn what should have been a success into a failure, and the faults of the executive would be borne by the system. I am confident myself, that under certain circumstances, balloons would be found meful; and no one could say after all, more against them than that, like the fifth wheel to the caseh, they were meless.

Since writing the above Paper, an experiment has been carried out under the direction of the Ordnance Select Committee, a brief ascount of which is subjoined. Should the matter be proceeded with I shall be glad, on the completion of the experiments, to furnish a complete account of them

On the question being brought before the Committee, the points they wished to establish were, first, that the fact of being able to overlook a tract of country from a great elevation really conveyed the advantages it was represented to do; and secondly, that there was nothing in the abstract situation which made it impracticable to reconnoitre from the car of a balloon.

With this object only in view, an ordinary balloon inflated with coal-gas would suffice; for, though unfitted for the purposes of a reconnaisonnee, still by choosing a cultu day it could be used. Arrangements were therefore made for the hire of one of Mr. Coxwell's balloons, the necessary guy-ropes, gas, dec, being provided by Government. Aldershot was the place appointed for the accent, as the gasworks happened to be conveniently situated, and, being a cump, there would be no difficulty in obtaining the concurrence of the military,

The authorities at the Horse Grands sent down orders to Aldershot that on a suitable day for the assent the traces should be marched out in different directions, so that the value of the balloon as a point of observation, could be practically determined.

The first time appointed proved a failure, owing to the beinterom state of the weather, and the experiment was put off till the 13th of July. A field-day, however, for the Prince of Wales lwing fixed for the day after, the secent took place on Tuesday the 14th. This so far modified the experiment, that no observations could be made on troops at the extreme distance at which it was anticipated they would be visible from the balloon.

The inflation was completed before eight e'clock in the morning, as the ropes and non being new to their tasks, it was considered advisable that a few preliminary ascents should be made. Mr. Coxwell had been no higher than about six hundred feet in a partial ascent; so that, except myself, no one had before been to the height of one thousand feet, which it was now proposed to attain; and, in a matter where any avoident would in all probability carry with it serious consequences, it was proper to take every precaution. After inflation the balloon was carried to Thorn Hill, some three hundred yards from the gasworks, where the ascents were made. Three guy-ropes were used, one of which, stronger than the other two, was passed through a snatchblock fixed to the ground. The roses were manned by a party of engineers entirely new to the work. No difficulty was experienced in either raising or lowering the balloon, the latter exerstion being done in about fifteen minutes from the bright of one thomand feet. The greatest elevation reached was one thousand two hundred feet, and varied from that to one thousand feet, the balloon remaining for upwards of an hour and a half hovering over the camp. It was raised and lowered at pleasure, to enable the observors to be changed, and made some eight or ten ascents before it finally left the ground for its free flight,

As to the practical results obtained, the whole apparatus being unsuited for a war-balloon, the experiment afforded no criterion of the difficulty, or otherwise, of inflation on active service, where the gasumeter would have to be carried, or, indeed, of the amount of stability a captive balloon might be capable of attaining. It was shown, however, that the transport of a billion when filled was simple, and that it could be easily mised and lowered, A tract of country altogether unseen from the ground below was brought under observation, and the movements of troops on the top of Casar's Camp, otherwise out of sight, were clearly discernible. From the top of Thorn Hill, the range of hills known as the Hog Edge, of which Casar's Camp is a part or adjunct, bounded the horizon on that side at a distance of somewhat less than two miles. From the elevation of one thousand feet, such a boundary no longer existed, the slopes of the opposite sides of the hills even being visible; in fact, an effective horizon of twenty miles diameter was obtained -- that is, no large movements of troops could take place within a radius of ten miles without being seen.

The day of the ascent was very still, exceptionably so; and how far it may be possible to overcome the difficulties which arise when the air is in motion, can only be determined by experiment.

My own idea, however, is, that with a properly constructed apparatus, bullon reconnaissances may be made in a wind moving at any rate up to twenty miles per hour. The higher the wind, the less would, of course, be the altitude attained. However, a height of even two hundred feet is more than that of the spires of most churchespoints of observation eagerly sought for when on the march in an enemy's country,

It would appear, therefore, that, under certain circumstances, the balleon affords means to an army of carrying with it a lofty point of observation; and, so far as the experiment went, it bears out the opinion I expressed on the matter in the paper to which this is an addendum

With reference to the general subject of ballooning, I believe that some useful results might be obtained by photography applied from a balloon. A series of panoramic views might be taken by moving the machine along, which would be sufficiently intelligible to enable a draughtsman to make a sketch from and which would have been taken for more rapidly than any survey on the ground could have been executed. This, however, is somewhat a matter of speculation; but I hope, should an experimental reconnuitring apparatus be got up, to be able to make some experiments in the matter.

The 'St. James's Magazine' has an amusing article "On Three Mouths with the Balloons in America," giving an account of how General Fitz-John Porter, when appointed to command the siege of York Town, was carried alone, and in a helpless plight (owing to an accident), above his army; the balloon, luckily, descended within his own lines.

A very able article "On the Defence of England against Invasion," by Lieutenant Steinmetz, of the Queen's Own Light Infantry, in 'Colburn's Magazine' for December, 1864, states:- "Nor should the service of aerostatics be beneath our attention. In spite of the opinions recently expressed as to the inutility of the contrivance, we contend that balloons can be made serviceable for reconnoitring purposes by a skilful eye and ready pencil, as demonstrated by Baron Reveroni de Saint Cyr, in his curious work before mentioned. A few hundred yards of elevation will be sufficient for all occasions, and the appliances of art can render the ascent safe and secure at pleasure."

> Were half the power that fills the world with terror, Were half the wealth bestow'd on cames and courts. Given to releven the human mind from error There were no need of arserals and forts The warrior's nome would be a name abhorr'd. And every nation that should lift again Its hand against a brother, on its forehead

Should wear for evermore the purse of Cair. Lorenterrow

If Europe should ever be raised, it will be by its warriors.

FROM WHENCE COME WARS AND PROPERTY AND THE P. James in L.

THEY HAVE BLOWN THE TRUMPET, BUT MOVE GORTH TO THE BATTLE. ERRE, vii., 14.

\* See 'The Day after Amageddon,' a poem of Horatius Bosse, D.D.

### CHAPTER IX.

# METHODS OF DIRECTING AEROSTATS: WHAT HAS BEEN BITBERTO DONE, WITH SUGGESTIONS FOR FUTURE EXPERIMENTS.

"I I've reases by industries, we arrive at one carefusion; if we reases by obscions, we arrive at sucher. This difference is the results in Swaps a proof that the subject is which the difference raises is not yet capable of intendite transment, and that some positionary difficulties have to be removed before it can pass from the empirical stage into the scientific state."—DEXELY History of Christiation.

IN. LARRANG ANTHON OF TELESCOLARISH—THE STRANG STANDARD THE STRANG AND THE STREET AND THE STANDARD - 1000 ME AND THE STRANG AN



As an example of the manner in which scientific men may sometimes err in their calculation, I will, preparatory to pointing out the errors of Mr. Monck Mason, who has hillherts been the most generally accepted authority in England on acrostation, cite a povertial instance in the case of Dr. Lardner, the author of the well known Cyclopeadia. The following extract appears in his "Treatise on Illydroattics," edition of 1830, where he boldly asserts the impracticability of steammavigation":

The resistance arising from the quantity of fluid displaced by the moving body may, therefore, be always greatly diminished, and in some cases rendered almost insignificant, by a proper adaptation of its shape. The

accumulated revisions string from the increased speed of motion is knower, an impediment which not at an rows. The first lather revisions of it light to holy merrig in it increases in proligiously repid proportion in report of the increase of volority is one which set an impossible limit to the expedition of transport by vossimoring on the surface of water. This property has length over will know, but it has revived questy increased importance from the recent improvements in the application of steam. If a certain power he required to simple a word at the rate of first miles an loar; length, of their view, being that desirable that prove would case it in some at the rate of first miles an loar; length of the view being that desirable that is not sown that the time the power is assessary to produce this effect. In like manner, to use the vound to move at the rate of fifthers inless an loar, or to give it there times the original speed, after times the original power is accessary. That of calmada, kinesses is a much larger rich teach the three-seed each off-field. It like a can can like a carried term unless as how by the strength of two lorest, to early it is, maller as how we will have rich with the sulph hower. The admits the carried with the carried of each off-field resident in the carried of each of the city of the carried of the city of position for the carried of the carried of the city of the contract of the city of the carried of the carried of the city of the carried of the city of the

In 1716 the Earl Stanhope himself pledged the sum of 9000f, for the success of some experiments in steam-marigation. Seconsepondence between him and the Lords of the Admiralty, given in Lord Stanhope's "Life of Pits," vol. is, p. 307.

2 R

These considerations place in a compiessus point of view the advantages which transport by stons engines or millureds processes over the means of carriage framided by infinite artigation. The noting pover has in each next to overcome the inertia of the local; but the resistance on the read, instead of interesting, so in the east, in a faster properties that the volovity, does not increase at all. The friction of a carriage on an allural noting sixty unified as a hour would not be greater than if it moved bet one line as hour; while the resistance in a river or consul, were such a noting notingly, would be multiplied about these. In properly a carriage on a level million of the expenditure of power will not be in a greater ratio than that of the increase of speed or of medial effect, entailing an encomodal picroscot consumption of the norther glaviships.

But we have here supposed that the same means may be rescribed to for propelling beats on a creal and courtings on a radious. If these out, becwere, upport higher to that it is practicable. Impositions to the most stema on candal have hildered, recept (in our instances, impeded the application on them; and we are forced assume on candal have hildered, recept (in our instances), impeded the application on them; and we are forced assumed on forced the instance discharged becomester. Here expendition of animal strength takes pluse in a far greater properties than the increase of speed. Thus, if a bore of a certain strength is havely able to receptor; a given had been made as day for a continuous, two forces of the anner bringeth will be absorptive installed to transport the same between the same and the same strength will be absorptive installed to require. If a sail greater people is sampled, the same of homes accounty to accomplish; two tall be increased in a predigiously repid propertion. This will be released it in a reconstruction of the contraction of the co

The so-to-inhorout which has been excited in the public mind by the extraoilmery results recently exhibited in repetiling heavy carriages by datase-inguises on millowed will subhisi if these ironamizes be felly considered. The mering power and the resistance are naturally compared with other mering power and resistances to which our united have been finallize. The the power of a stone-respect there is in fact, to practical limit, the size of the machine and the strength of the materials excepted. This is compared with sparts to whose power Section has not only imposed a limit, it is natures one. The strength of animals is discensaried, and there power of spect once we. Again, the resistance arising from friction on a road may be dismissible by are without any neighbold limit, to the six it smalles in loral interacts to whether extituted to specify of the medium toy be negmented; on the contrary, the medium of a weed through a cond has in extremely a relievance by increase of specif, within non-category and the contrary. The medium of a weed through a cond has in extensative a resistance by increase of specific which non-category and the contrary. The medium of a weed through a cond has in extensative a resistance by increase of specific which non-category and the contrary. The medium of a weed through a cond has in extensative a resistance by increase of specific with non-category and the contrary.

As there is some analogy between the opening of the Atlantic steam-navigation and the future we anticipate for acrostation, I will here give extracts from an article in the 'Quarterly' Review' of October, 1838, which is an adieu to the American "Liners," and a prospective view of the benefits that would arise from steam-navigation:—

The effect of this achievement is by no means only to be described or foreone. Even the Americans, with all their reputation as a self-prosened and considering people, have displayed unwousled replaces and satisfor an excession of the first arrival of the "Scrims" and "Grant Wortern" of New York—quite as much as one Heisted midphones on their Frivering and we are not seem that either people to be bland for it. We are not serve that the former are for cut of their "receivaining" when they speak of this as a new spech in the history of the world. We can context in the Leiching" of the myrisis where consolid therwised as We York when the English below were heavily expected—when finally after days of almost broadthies workshing (which, is fourful spirits, anglet well have afforded an energy of the region of the second of the three second of the second of the three second of the three second of the three second of the second of the three second of the three second of the three second of the second of the second of the three second of the second of the second of the second of the three second of the three second of the three second of the second

"Against the wind, against the tide, Steedying with apright keel."

It was worth something to be a passenger in one of these fortunate boats at this moment. We have before us the



journal kept by one of the favoured few on board the "Great Western." From the time of crossing the bar of the harbour, all her "poles" were set about and flags gaily streaming at each,—the foreign ensign at the gall, and at the fore a combination of the British and American,-and "at 3 r.x. (the narrative continues) we passed the Narrows, opening the bay of New York, sails all furled, and the engines at their topmost speed. The city reposed in the distance-scurcely discernible. As we proceeded, an exciting some awaited us; coming abreast of Bradlow's Island, we were minted by the fort with twenty-six guns (the number of the States); -- we were taking a festive glass on deck. The health of the British Queen had just been proposed—the toast drunk—and, amid the cheers that followed, the arm was just raised to consummate the naming, when the fort opened its fire. The effect was electrical; --down came the colours, and a burst of exultation arose, in the midst of which the President's health was proposed. The city now grew distinct: masts, buildings, spires, trees, streets were discorned;-the wharfs appeared black with myriads of the population burrying down at the signal of the telegraph, to every point of view. And then came shouls of boats-the whole harbour covered with them; -and now the new-comer reaches the 'Sirius,' lying at anchor in North River, gay with flowing streamers, and literally crammed with spectators-her decks, public-loges, rigging, mast-head high. We passed round her, giving and receiving three hearty cheers:then turned towards the Battery. Here myriads again were collected; --bosts crowded round as in countless confusion :-- flags were flying, guns firing, and bells ringing. The vast multitude set up a shout--a long, cutbusiastic cheer-echoed from point to point, and from boat to boat, till it seemed as though they never would have done."

So much for the first transports: we cannot doubt that time, experience, and reflection will confirm the general estimate of the importance of this achievement, which, we may say, is now barely beginning to be made, and that chiefly in a more mercantile and immediate view. This view itself, however, it must be allowed-waiving for the present all further projections into futurity-is sufficiently exciting, especially to the Americans, who in many respects have more to gain by the new arrangement than ourselves. The intelligence from the Old World, for example, must of necessity be of more general, various, and lively interest to them, thus that of the New World to us. The balance of resources, indeed, is immensely in our favour. Not only does America occupy the western homisphere by berself, while all the other continents are pitched against her in ours, but on that side civilisation has yet made so little progress, things are so literally sen, that the "United States of America" might with some plausibility assume to be "America" at large, according to the complimentary phrascology usual amongst us. The feeling with which we (unless on extraordinary occasions) watch for news from America is exceedingly different from that with which foreign tidings are awaited by the people of the l'nited States, whose eituation, nationally, in this respect, may be almost compared with that of an individual exiled -as poor Crusce says, "out of society's reach." Of the interest are have in ties, indeed, too much can hardly be mid. Thu great effort employed in this steamachievement itself, and the extraordinary sensation which the issue of it has excited, sofficiently proclaim a just appreciation of the vast commercial importance, at least to us, of the movement in question.

Whether the greater despetit of areas now about in its effected by the Atlantic stambach will constitully modify the state of things, may sharl if our modelate. School if the control very mark factor than we at present witness or anticipate, the result is store completely. Increase small fatour foregoes. We presented creation in the control of the c

This is looking for about, operably for one who has disputed till this mount the practicality of what was compiliable every para since (or we shall show)—the pumps of the Admitted by stans. But part non between node great ministers before this, and we are not sens but the lowered Dector may be in this passes making amonds for bodge time cought maying the powering of the some time, on in the postagous plant quoted, how widely availed to one be when consists required—gring about of thinges on one task so much as low on difficulty of the consists required—gring about of thinges on one task so much as low on difficulty of the consists of the consists

Steam—to say nothing of "electricity or magnetism"—is no respecter of remance. It reduces things to an
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aquilling regularity. The British and American Steam Company, who have just louebod at Blackwall a single thirty sight for the open than any in Her Majority vary, with ascommodation (as they solverties) for 200 possespers, melling to an account of the single vary of the same to have basis like this remaining on either side the 1st and 10th of the side of the side

We were speaking, however, of the first sensation the achievement has produced, and which, we venture to predict, will, at some future day, be a matter of no little historical curiosity. The New York editors seem scarcely able to contain themselves. "Side by side at last with the Old World," says one. "Now then for the Coronation," ery half-a-descen more. And then the files of Enropean Journals unrolled! Fifteen days from Bristel-sixteen from London-eighteen from Paris - less than a month from Constantinople - from Bombay itself only between sixty and seventy days? A Norfolk (Virginia) editor remarks that they are now as nour England as they were the greater part of last winter to Detroit; and a Esstonian, we suppose, might say much the same as to New Orleans. A revo-Intion this, indeed, such as the world rurely sees even in our changeful age;—a revolution theroughly overturning the old systems of most of the business world at least--yet effected, as it were, instantaneously, and without the loss of a drop of blood. The Americans themselves, not more in the transports of their exultation over the first thought of the effects of it, than in their admiration of the thing itself and of the style in which it was carried through, seem to have been too much otherwise excited to feel their wonted chagrin at appearing to be ever taken by surprise in matters of practical adventure. Nay, cherishing, we do believe, the honour of their fatherland next to that of their own (for we have often noticed that, although Jonathau gives us a gruff, grussbling, family growl of a lecture now and then-partly, perhaps, to prove himself our descendant -he is never easy in seeing it done by anylody size), they "quite forget their sorrow in their pride," No wonder they have done so; no wonder that a hundred thousand New Yorkers tarned out on the 7th of May to behold the departure of the "Great Western" on her first voyage homeward, and to cheer the brave ship on her way; no wonder, again, that when, at the end of a fortnight, she helisted the British colours in King's Road, the burghers of old Bristol, roused at length from their Rip Van Winkle nap of half a century, broke out with firing cannons, and raising flags, and bell-ringing, and vehement eating of turtle!

Here, at length was an "electric offect" in England—a sensition number two, at the loast. One of the power, in this slight people drove a spelabile thought of vor a spelabile thought of the spelabile thought of the product of the subject of Mr. Manager Claston—it seem almost as frobe in if the down were still cent the leaves; and again at the plotted in the burghers on the burghers of the subghers on the district of the burghers on the district of the subghers on the selection of the burghers of the still people of the subghers of the s

But, transports and jesting noide, but as summarily consider a few of the more obvious consequences of some more which may be expected to spring immediately from the achievement of which we have spoken: to some of them we have already made a havy allimion.

The improvement of the instrument itself by which this work has been done may be counted on, perhaps, as the first. Without being over-sanguino on the subject, it is reasonable to bear in mind that, while sading-vessels have been in existence and been more or less making progress as specimens of art, during thousands of years, we are still in the infancy of steam-navigation. It is only thirty years since Fulton ascended the Hudson with his boat. In 1810 there was no such thing in all England; and so late as 1820 there were but thirty-five. The most important improvements also have been vey recently introduced; and, without particularising these, it is sufficient to say that the learned Dr. Dionysius Lardner's miscalculations on this subject of Atlantic navigation have evidently been caused by almost wholly overlooking those some improvements oven so far as some past years are concerned (and a year in such a progress as this agent is making is not a matter to be overlooked), or regarding them too much as more speculations, not likely, or not yet fully proved, to be espable of great practical effects (as they have already been); while, as relates to what may yet be established, though now it is but experimental, or what may be discovered, of which now nobody drouns, the calculations in question have apparently left no leeway for the ingenuity of our successors, or even our contemporaries. It was taken for granted that all had been done which could be done -that there were not even any "hidra power" hereafter to be brought to bear upon atean navigation, as well as upon other things, and to supersede steam itself altogether. How grand a mistake this was we need not say; let us beware of its being made again. Indeed, there is little danger of it, since scarcely a week now passes without the appearance of some new scheme. We have a case in point before us as we write, in the account given by the daily papers of a model-boat, lately constructed on the plan of doing away with the use of puddle-boxes -- a most cumbrons, clumsy, and uncouth appendage to the wasel, as everybaly knows-by what is called a patent propeller.

Halfs condenses, again, will have a fair triel on the rotte. It is well known that he claims with these to increase the speed of a botto-eff-light, a best, beyond its employ its femous managine; and use we at an applicasitive bac, on the plan of Its Horszal, is giving set to America from Liverpool for a triel. We do not say what faith we have in these showners or insequently set that highly be mostly to mention them sufferentiates of the reducecentricing, venturing splits of the intest, especially in this absort new department of action, excitement, here conperbition, and high logs. It cannot be dealered, we think that the prosage of the Attention by some will be not the consign ten pare. In brought to a sature of one to poolly articular lineary and perfection of which these who intermed it now fairly pround to a preserve considera, in it acree was mostly delayer and all that sevies, whill enterpole, particular, gains, or a leve of money, or a lower of delicitation, can accomplish in each committee, or

The extension of steam-averaginous to other now, was, and now limportum regions of the plobs, when it has been hiller to unknown, with corresponding influence whenever it is interflowed, is a super, and no one or the process and fast-coming enter of things can the Atlantic; as much so as in the continued improvement of this influence of the continued in the extended convergence in the continued in the extended convergence in the continued in the extended convergence in the little proposed; it will be insurabor; in other works, as it has been juvenious. Then years ago, or for young, or twen, the notion of averaging the Atlantic by steam, or as permanent spectral, profitable ship—as a rock, we nome—but were extensed this public minds, if it had atlant deliverable. And every wave over the public minds, if it had atlant deliverable in the other was good recons in it. Publicable in the contract of the public wave of the public contract, manipoly within four your by the Atlantic, and upon whose perferencessed ensurements of the importanticality of the Atlantic scheme have been more or loss band—these enth night lever forced little better than Patholic the they have being the winds.

Ballod, atting solds improvements, expressing was tough short where we now are—just rouly to begin that is modifier could preven the extension of the judge, as it stands all enter the waters of the jobs, to as in identition and our short introduction. It requires to get if of projecty to see that each specify, will be use of the effects of the beginning of the contract of the contract of the projecty to see that each specific project is seen of the effects of the form of the first interest of the project interest of the contract in the stands of the project interest was recentled at every or the contract of the project interest was recentled at every or the contract in the stands of the project interest was recentled at every or the contract in the stands of the project interest was recentled at every or the contract in the stands of the project interest was recentled at every or the contract in the stands of the project interest was recentled at every or manufacture has been desired, where the stands is project interest was recentled at every or manufacture has been desired, where the project interest is not a standard to be project interest. The project interest is not a standard in the project interest in t opportunities will remain, and become dully move and move argent and definite. This revictation is one of all other that "cannot go backwards." It must advance with an energy, kindred, in the moral world, to that of the physical power itself on which it is founded—an energy to which history affords no parallel. It is scarcely too much, we believe, to say that the whole race of mus is dortined to see and feel the phenomena and the influence of its allcoopering progress from elime to clima.

So much for the improvement and extression of this instrumentiality itself. And now, what of the net-bank purposes will be a variable—when the changes will it work in circling arrangements other them to come? Here we come to question of some "right and moment." We come to quick one in an artist like this with any protocol or an adequate intension, even outh if the expected to be in the power or the expectation of any party, in the present stage of such as exterprise, to do justice to the theme. Let us glazoe, however, at a few points, rather in the way of differentiality the important-ballity of the analyse than of fairly bleaming it.

As recards, then, what may be called the mere mercantile interests concerned—and chiefly the immediate (not

are again, thus, what may be called the zero secretation interests concerned—and clearly the misculate plant perspective) conner—better the two contrary, particularly, which own to have been up the enterprise in gold current. These, of course, will experience in this, so in overy department, in first and greatest effects. To a was extent instance were but that they have of sainly reveals, and that a two. This is not a new, but it indirected, it which may people can show the plant of a plant people on the order to be a probably and the probably

The reason of this transfer in each case is too obvious for explanation; but it may not be known to all our readers to what a degree the uncertainty as well as the length of a sailing-voyage to New York, as compared with a secured one, is an argument for this new arrangement, and a proof of the necessity of its naiversal adoption. From the very high and well-deserved reputation of the "Liners"—the most perfect conveyance of the kind and the greatest advance in merchant navigation ever known up to the spring of 1838-it is perhaps a common impression, that a passage between France or England and the United States in one of these superb vessels might be counted on as much for a tolerably well settled period of time, as for the comforts and inxuries to be enjoyed in the course of it, or for the nautical management. The fact is entirely otherwise, as every man in the business well known. Some wascess are more unfavourable in this respect than others; and the winter months are none of the best, we allow. Neither is the return-voyage so uncertain or so long, we should remark, as the voyage out: it is notorious that the "Liners" have always had smaller fare coming than going, in about the proportion of twenty-eight guineas to thirty-five, and that even the steambeats (without so much reason for it) have thus far continued the custom. But to take a one; at hand; during the last winter-at the very time when we were continually getting "late" American intelligence by musually short and quite regular passages—the corresponding packets going westward were encountering the full face of the same winds and currents by which those coming eastward were propelled. All the "Liners" which left the three European packet-ports during six weeks were haffled and beat about in such a manner, that at one time about eighteen of them were due at New York; and thirty out of fifty belonging to that port were then supposed to be on the ocean, working their way home. The average length of this passage is about thirty-two days. One of the Liverpool ships, which sailed January t, was spoken, fifty-five days out, in long, 43°-some 1000 miles from her destination; the others were fifty, sixty, or even seventy days on the voyage. That this is no fault of the packets, we need not say; in fact, how they make headway at all is the wonder. Consider, for instance, this paragraph, which we take from a New York journal of the period referred to:-

"We have been shown a chart on which the track of the 'Cambridge' was pricked off, coming from Livespool, and it is a matter of some stooishowen to the ship has reached per stat all. She mild from Livespool as the first harmon; and on the 2-me is not hope the stood of 20°. From that day till the 27th February she encountered centrally which, simultions belowing a severe gall; and for the last severate days he made hat about a continued ventrely which, simultions belowing a severe gall; and for the last severate days he made hat about ward and centrel of Shell risked, and a part of the time could make no better than a ShE course. The distance better the shell of the shell risked and a part of the time could make no better than a ShE course. The distance the shell risked and the part is about 300 miles, but the 'Cambridge' has, and this passage, mild supported or

5000. She has proved one of the stanchest vessels which ever breasted the ocean wave. A copy of the track (which looks very much like a spider's web) may be seen," &c.

For sulling-ally, if any, we pressure, would have done to will safe these circumstances as a "Lines". We observed, short the very privals, it is the highing, that a tower like Discurrate, housing the affleign was labore in the Language (Barch 20th), howing how done as of the concer the solar breadth of the Market (Dentz). It is very sublem we have do a "Lines" returning into by our third standing her towage, but with other results it of cosmoss conversions on this roots. Subject now out more times as a work, and even move, trying to make bandwaye solarwise, and additigated and the subject of the su

Here, again, is a striking illustration from one of our provincial journals, referring to the last winter:-

"We cansed more clearly above the uncertainty of prompts across the Athentic than by stating that the 'Inconstatis' (figuit to Ork on the 6th Assays, and restrated by Dymant on the 24th February, bring been to Hillistia in that time—foreyasize shay; at the same period the 'Samera, New York periot, which left Promound's on the 6th January, was after we dray getting. New York, and the "Problects" thick for on the 12th Annuary, and the whole of the 12th Annuary and 12th Annuar

Some readers, little record in currents of whole w water, and other contingencies incidental to the averageine of this route-means of them quite peculis to le-might be recordy to infer from this attenuant the recross of when we have just said. But much more striking cases of the mass kind have often covarred; as, for example, where the difference between two pecks of levering the one apre in the everage of cost day, or the meaning of the next ten has numed quite as great a diversity as any mentioned above in the length of the voyage. Two objects may see any and at the assumement from New Vict, and not shall presently—the field difference between two-field readers and the days are more from New Vict, and not shall presently—the field difference new development of the strike the strike of the two readers. Livinged even that the strike of the strike of the two readers Livinged even that the strike of the strike of the two readers Livinged even that the strike of the strike of the two readers Livinged even that the strike of the strike of the two readers Livinged even that the strike of the strike of the two readers and the strike of th

In the ordinary possenger-ship (commonly called "transient" weeds) is well as other normhant-raft, gaing weistward particulty, while now and then a fortunate one may be over the "Linear" (is also beed done this season.) passages of even distreming length may cover, for layed anything of the soft which has over happend a fortunal particular than the particular transition of the particular transition of soft passages and the particular transition of the particular transition. In Federal particular transition for any done of soft passages are to passage and the passages are transition. The description of the papears are of these power whether on their narrical particular transitions. In substantial particular transitions are of these power whether on their narrical particular transitions, and that it seems, "to their low provinces are of the papears are transitions, which are transitions of the papears are transitions, which are transitions of the particular transitions, which are transitions, and tout, it seems, "to their low provinces that the particular transitions, which are particular transitions, and the particular transitions are the particular transitions, and the particular transitions are particular transitions, and the particular transitions are particular transitions, and the particular transitions are passages affect at another face, and in the case of particular transitions, and the particular transitions are particular transitions, and the particular transitions are particular transitions. In the case of particular transitions are particular transitions are also as the particular transitions are particular transitions. The particular transitions are particular transitions are particular transitions are particular transitions. The particular transitions are particular transitions are particular transitions. The particular transitions are particular transitions are particular transitions. The particular transitions are particular transitions are particular transitions are provided to the particular tr

One move the last "Ellins" from Leghers, with a sugge valued at a low-first theorem delicins, after a previous verges of one manufact and three deposits—terror having inclinated for fifters deep as measured and vertical contributions of the last product of the first of desirable values of desirable values of desirable values of desirable values of the last product of the last values of the value of th

Debts have arrived of Cop Clare from New York in two to robby days, and then been morthy arrived in similar [Lavrey-col- and the same as to the New-Hill kill into, but apending of the delicible distration of the purcupers as fir as confirst gos, the white floating correspondence of the two great commercial communities concernical—in pull as a period of most original importance—belong up and down, and off and in, about within the confirmation of the confirmatio

However this must be done at some between carefaves and the Americans, we have shown in some detail. Almost all mercurial travel and correspondence must be transferred at steen. All light is five, and associated beneficially as the state of the state o

To be sure, oreinto will occur—now or less those are to be expected, as things are at present. By analohy we trent—none gover improvement—no likelilly will be very osciatify heaved; a manufals, however, we arisispine some treation. The competition will near be for the between description; the new ground is most inturious; and the contraction of the cont

The horrid disasters we hear of every few months or oftener-peculiar to the United States, and to this part of them in their awfid extent, and by which it is estimated at least a licensed live a year are last - these are almost always caused immediately by gross misconduct on the part of a few persons in authority, who, for the suke of a race with a rival, or with some other pretext equally eggent, run the most imminent hazards without the slightest hesitation. We have seen accounts of these races on the Western rivers for a distance of a hundred miles or more-much of the time neck and neck—the whole ship's company on either side meanwhile desperately engaged, and wrought up to the highest pitch of excitement in the murderous struggle. In this way the "Ben Shersed" got a-fire on the Mississippi, two years ago, when hundreds of passengers perished; and such is the secret of most of the "eccidents" which, in nine cases out of ten, are no accidents at all, but ought to be criminally visited by the law of the land as much as nurder in any retest shape. We have heard an American friend of ours allege that no countryman of his would healtate running the risk of his life for the sake of getting -asystere - half an hour before - anglesh else. Matthews, we remember, made it apparent, in his way, that the Yankees do everything in "twenty minutes." These are caricultures of course—the one no more than the other; but both, we fear, are too well based on fact. The Americans carry their energy a little too far; they retain too much still of the wild impetuosity of youth; they want a new infusion of old John's steady and regular blood. We like not such driving fashions-such helter-skelter haste, in steamboats especially-on Atlantic voyages least of all. Congress we see has the matter in hand, and we trust it will be with effect: and meanwhile—ac-ver legislation (especially in that country) will not decrey; thing without public opinion—as the meangers and master or desumbant, who have very often been et on, and always telement, any d in bawed by that public to whom they over their character and their lever)—we convexly hepe that the general voice may vanto itself beard and trust that arrangements of the most solid and effective nature may be promptly adopted.

This much for a plain bits, which, we see were, must be taken in good part, for, when we have by a simple arrival, of one hashed and seventy is homes being destrept of ince to be come, and one hashed and seventy in machine, it is high time for all parties who have to do and doal with seeds a extensively-swerking community, and are likely have much soon, to peak out. And yet, we were going on to say, when this like occurred to us, stata, accidents or no accidents, nothing apparently one stand in the way of the complete trainspit of the new dynasty of the sone asken—just as regularly and in the declarates run to the regularly contained to have the best from the one side—just as regularly as it is the distance are to be regularly goardness of board the board from the one side—just as regularly as it, the fettiers in machinery, they were an independent incident to the accipitation—like two problems of parties bright head which do are the own put the handerd peak every three months which do are the own put to be forced by the district points of the contract of the parties of the parties of the parties of the size of the second of the size of the second allower one, induced allower one, induced in the parties of the second of the seco

Of course, these magnificent "Libert," of whicher have update majorfully as after (for we know then well, will profilly "full from their high elester." Thinking of the proad part they have placed now for some trevely yours—of the great reputation they had fairly gained—of the eminent communical erroles they have madered during the mean interpretation provided our communication with the United Status—on means one time that made, as it were the tensor interpretation by the first protection. In this contract, the contract of the property of the property of the contract in the property of the contract of the property of the contract in the first property of the contract in the property of the property of the contract in the property of the property of the property of the contract in the property of the prop

"Two packets, the 'North American' and 'Sablons,' have arrived at Liverpool, bringing old dates from New York!"

Presently they will come to be smooth at all. And hole at the "Green Western," the inflamma manner, on her first three days out, excluding between k1-Line—"more days from Line-prod-with the black k1-line k1-line k2-line k2-li

But the dominers will have not merely all that is worth parting (to thing) of the localizes of the "Linest", their effects on the source of Positions and the considered. On this point are radious, at previous and the resource is it is not po faceful that the non-appearing of immunols finition in the boundarin of previous and the "consistence are previous and the resource of the previous and the prev

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A steambast awended the Ministeppi and Ohio a few weeks since,—sixteen handred or seventeen hundred miles in str days and seventeen hung,—as we learn from a gestienna tien on the spot.

we believe it will be, and much more, between America and Europe. We shall associate with each other as in oneighbouring counties. Our tearints will wish Visigans in swarms, as they now do Loch Loomond. Prophe will travel who never did believe: it will be literally easier, and tole for time, as some one has mid, to travel than to stay at home.

A word of explanation on one biotectal point of some interest—which it is well should be settled in secon—and we have done. We show earlied be the point at the the passage of the Atheile jue store and by a means to their solicious set of the biotect of the hind. When we have spokes of the recent of these are been in strong terms, it has not been with the industry of a concentration of the solicious settled by the structure of the biotect in the solicious settled by the structure of the structure of the solicious settled by the structure in the structure in the solicious settled by the structure in the structure of the solicious settled by the structure in the structure of the str

They have been too mech accustomed to steam necroments on a grand scale to be taken by surprise with this. Not only did Fitch, of Philadelphia, half a century ago, pender, with perfect confidence, the establishment of Atlantio steam-nevigation, but performances of substantially much the same character, as regards risk, have for many years been actually going on before the eyes of the American public (as, indeed, to some extent also of ener). A few mentals since we need this reaccurries in a New York internal:—

"The British steamer 'Sir Liouel Smith,' for which so much anxiety has been felt, reached this port yesterday, in fifteen days from St. Thomas."

Along the extensive cents and up the wat rives of the Unifed States the nature of their consequentions in well known. At New Criscass they were taking, any our er trans ince well as at New Trich, i contabilitying time contains with Emproy by stom, and the project second to lower been abundand morely on account of the "crisia." A british progress, which is the project second to have been abundand morely on account of the "crisia." A british progress, which is the state of the state

"Great Experiment.—A new steam-wessel, of 300 tons, has been built at New York, for the express purpose of carrying passengers across the Atlantic. She is to come to Liverpool direct!"

And she did reach Livrapool, secondingly, on the 20th of Tam—coming, moreover, clients from Sevarands in twentysic days. We have cost it stated that this would well set be seen only when she finded in until hold rate boot the hold. By anilogy, but these particulars, as we said before, we healty wordy of socks. After a somewhat calminative transport of the second of the presents, nighthesis of the repull predictation. The Danquer of Divisi visible bet also at Crossrod and gave his host anilow to be such as the second of the sec

To these, we believe, might be added the "Caraçoa," which is said to have gone over direct from Holland to Surinam, in 1828, making the voyage from off Dover in twenty-four days.

And this, as far as we know, is the whole history of Atlantic steam navigation. Its history, a hundred years here, will be more worth telling, though perhaps it say contain nothing more interesting to the men of those times than the early experiments of which we have now finished an humble sketch.

With minds thus prepared let us come to the question of aerial navigation after taking notice of what has been tried. We will present the difficulties in a tabular form, wherein we shall find that they may be all included under eleven heads.

The experiments of Blanchard, of Guyran de Morveau, and other aeronants, prove that ones on only slightly after a lalloin in a perfect clant. The cicherals though, the inventor of deveriptive geometry, and Member of the French Academy, in 1783, proposed a method of directing aerostats. As many as twenty-five pleirical lallocas were to be attached to such other, like beals in a necklese, so that they could clittle lie in a straight line, or bend in all directions. Two necessaris might be attached in a cur to each, and receive their orders by signals from the outpin for according and descending. He supposed that in this manner the movement of a screen in the water would be imitated; but this singular project was never post into execution.

General Meusnier, a distinguished officer of the French Engineers, has given the best calculations that have yet been made towards the progress of aerostation, in a work published in 1785; but his figures were neglected till Mons. Marey Monge embedied them in his able work in 1847.

He proposed a spherical balloon of estimary dimensions, with an exterior cover, to contain compressed air. By means of a pump be was to fill or enapth this, thereby ringing or falling without valve or ballast. As to horizontal movements, Meusuier trusted to atmospheric currents, and therefore derised such a plan as would enable the neronant to move from one current to the other. It was by means of cross sails like a withually, which could be outtracted and expanded with all the power the neronant possessed, and with this be calculated on obtaining a movement of three nails an loar.

The 'Times,' in the spring of 1840, thus chronicles the success of one of Mr. Charles Green's models at the Polytechnic Institution:—

A miniature balloon, of about three feet diameter, was filled with common coal-gas. To this were attached the boon, netting, and car, and in the car a small piece of spring mechanism was placed, to give nation to the fans, The balloon was then balanced: that is, a sufficient weight was placed in the car to keep it suspended in the air, without the capacity to rise or inclination to sink. Mr. Green then touched a stop in the mechanism, which immediately communicated a rapid rotary motion to the fans, whereupon the machine rose steadily to the coiling, from which it continued to rebound until the clockwork had run out. Deprived of this assistance, it immediately fell. The reverse of this experiment was then performed. The balloon was first raised into the air, and then balanced. A similar motion was imparted to the fans, the action of which in this case was, however, reversed, and the balleon was immediately pulled down to the ground by their forces. A more interesting effect still was then exhibited. The balloon, with the guide-rope attached to it, was balanced as before, the guide-rope having a small brass weight fixed to the end of it. The fans were then removed from under the car, and placed sideways upon it, by which their action became vertical. Upon motion being communicated, the balloon floated in a horizontal line, drugging the guide-rope after it with the weight trailing along the floor, and continued to do so until the mechanism censed, when it immediately became stationary again. These experiments were frequently repeated with complete success. Mr. Green states, that by these simple means a voyage across the Atlantic may be performed, in three or four days, as easily as one from Vauxhall Gardens to Nassau.

- "The vast number," says M. Depuis Delcourt, "of propositions for guiding balloons may be thus classified:—
  - 1st. The reaction of heated air on the atmosphere by the means of valves on the sides of a Montgolfsire.
     2nd. Chemico-physical agents, and agents purely mechanical, for Charlières.
- "3rd. By towing machines,—a method thought of by Thilorier, which is susceptible of receiving in certain instances important and useful application. These different methods may be subdivided into fourteen classes:—

2 8 2

CLASSIFICATION OF THE VARIOUS METHORS PROPOSED FOR THE DIRECTION OF AEROSTATS.

Morrosuritars.	Симпления.			
MONYMULPIPARES.	Chemico-physical Agents.	Mechanical Agenta		
Openings for heated air.     Beaction on the at- numbers.	3. Compressed air or gua.  4. Steam   Feelingth, or of Turning or facet, jet   Turning or facet.  5. Gampowder Control Phones.  7. Gampowder Control.  7. Worker's necul."   No.   In.	6. Inclined planes. 7. Groved surfaces. 8. Archimedran serve, 9. Sails. 10. Revenued persolute. 11. Ones. 12. Wing-like wheels. 13. Blasts of wind.		
	Truned and harnessed birds.			

Atmospheric currents, 14. Towing machines,

" Some of these will not atom the alightest investigation, and others are repeated with so many modifications that it is difficult to form an opinion of their merits. I Meetrs are frequently taken for nearly the same invention, inventors having neglected to remark what has already been alone."

The engravings berewith given will suffice for samples of some of the attempts already made, and need no further explanation.



THE GROUP OF EXPERIMENTS.

No. 1.—A Plying Gible made by an engineer maned Bilardille, It is not a plained how those wings were to be used; but it gives the idea of sweighting and laghtening a balleras with air by awara of a pump. No. 2.—18 July, 1764. Albé Belan's Mempellière. A lateral opening from whole it was expected the harded are sweal read and fover the balletin in the opposite direction. The numebone estelling first, the experienct was not made.

Fir. He ellicities was no more. No. 3.—A fullson with a reversed parachute by Mr. Henin. This parachute was to sheken the nevent of the ballson, and allow the action of the wind no the suith theody guiding it of pleasare. No. 4.—Nr George Cayler's Navigable Ballson, 1946.

No. 5.—Nameson's Accretate furnished with fine made of feathers; lort, like Julien's, a motive power is required.

No. 6.—
No. 7.—The Aerial Ship "I Aigle," of Mr. Lennox. It proved a fallon in the Chemica do Many Amend 1831.

failure in the Charaya de More, Augent, 1831. No. R.—Systems Petin, 1850. No. 9.—Systems Petin, 1850. No. 9.—Juliur's Aerostat. This newstat, made in a much \( \), 25 first in length, succeeded in the experiment mode at the Hippordrem at Puris, and vent against the wind. Its morement was by released

Phris, also were against to suspended below. This invention descress encouragement. No. 10.—November, 1951, Aerial scheme of Mr. Helle not yet tried; consisting of a combination of mile and screwa moved by the strength of two mea. M. Depuis Delcourt says :-

"Ballons, i. c. acrostate of spherical form, one accorde guided, as it is only possible for them to turn on their own pivots. Their progress is by fits and starts, swaying backwards and forwards.

"A guidable serout on be made, but then it should be ablipfiles, with wood and metal in its construction, involving a serious attempt, for which money is required. The value of one invealed, if spent on a proper course of experiments, might have decided the form and construction of a serviceable servoist, and the stake to be won in far greater than the cost would be;"

The most complete aerostat of this description hitherto tried was Henson's Aerial Carriage, which is thus briefly described by Mr. Wise:—

Mapy pressure were magnine in the belief that his markine was destined to prefect the set of serial navigation, are assured as beind one after his model, with which to cross the Atlantic. Indeed, it was well calculated to impire such a belief in the nerve theoretical main!; but to the practical man it at once occurs, What is to keep it from tilling over in losing its bulsace by a first of wind, or any other casualty, and thus tambling to the ground, whatting that it could raise belief up and any other forward?

The principal feature of the invention is the very great expanse of its metaloing planes, which are larger, in properties to the verific his tox curve, that there of many limit, but if they had been and greate, they would not have officed of themselves to sensini their own weight, to say suching of their machinery and energy; servly, though shortly, the verific has constructed in the contract of which is to prove the moder areflect to their case which there is the size in the contract of which is to prove the moder areflect to their arcret which it is passing, the resistance of which, testing, on it like a strong wind on the such of a whichted preserves the develor of the machines and is below. The sentiating of a strong wind on the such of a whichted preserves the develor of the machines and is below. The sentiating of under surface baryleges on the air is in front; and this is exactly the principle by which kinds are valided in the fifth with he stiff strain made of their wint pass.

But then this result, short the start, depends entirely on keeping up the speed, and there remains keyond that the still more fremished soliticity of first declaration that one of all former attempts of this hill have finished to entire the still more freezingth of this hill have finished as with the account problet. Mr. Benezon has remerted the difficulty partie, by interesting a demonstration of the art with the account problet. Mr. Benezon has removed the distributy partie, by interesting a demonstration of the still the still

The cidit of Newton's Journal of Aris and Sciences, speaks of it thus: "The appearies consists of a set, containing the copies of passages, engine, the fact, to which a recomplex frame, made of ward or handoons, and covered with careas or cibel silk; is attached. This frame extends on either side of the cor, in a similar names to the constructed steps of a latic, but with this difference, that the finates is immovable. Exhibit the wings are two vertical flux wheels, fernished with delige wass, which are introded to people the appearing the control of the

The amount of canvass or olded silk necessary for broging up the machine is stated to be equal to one square foot for each half-pound weight, the whole apparatus weighing about 3000 lbs, and the area of surfacespread out to support it 4500 square feet in the two wings, and 1300 in the tail, making altogether 6000 square Sect. The engine is proposed to be of from treaty-few to thirty herespower. It is stated in the specification that, on lamelying the markine into the air, an elevated situation must be selected, and the machine allowed to run some distance down an inclined plane, for which purpose vertical wheels are attached to the bottom of the car or boat. When the machine has thus acquired a momentum, the rotary flux-wheels are put in notion to ruise it into the air and proped it; the robbler spended to the car is then med for regulating its cosmo.

"The photoinequeph of this mobiles represent the orial sensor friging. The bat-like wing, or sall, is the milwish trans on joints, susewing the same purposes to the last of a livia and one be depresed, elevate, contracted, or expanded, at the will of the commoder. The our, containing the stem-segine, earpy, conduction, and passages, in suitable compartments, is represented by windows, and three subsets appear which the carriage one may one last. Arrial goes formers, and is a little raised; to the subble of the other is joined the tot. The carriage is tree handed and flip for thy fuller, and the mile of the tags. The raishock the carriage can be a little raised as the tensor of a which the latter of the contract of the corriages as at one wise, using to the difficulty of proposingle it in suggested and contract of the corriage, where it is the best the proceding below."

This invention dow the attention and commendation of the scientific both of Darque and America. It rectified comes to correct the construction and conceptual period action of the Birth ans with table never perceival it. It, necessary to the construction and conceptual period action of the Birth ann are that he correctly the second continuous, without his infificient homeometric confidence and the metal and the metal and the metal period and the period of the proof of the policies. We also the period of the proof of the period of the period of the proof of the period of the

The population of the spheroidal halloon by stons or any other power, applied to the windmill-like published, was first shown by a working model, part in moise buy a clock-pering, by Charles Green, of England, of the most experienced accreamate in the world, before the Society of Arts of Lendon, ten or twelve years ago. By reference to the London papers of that period a description will be found oncerning it.

I here annex an article on the same subject from the 'Westminster Review':-

The problem of sorial arcigation is, of comes, not completely reached by the invertion of a machine or exponents coupled of entriusing the home had by its day in its is necessary to discuss; therein, the means of gaining or propiling such a methics in any direction. It would, perhaps, as for sight appear probable that, if means of fastingin the size belowcome, another foreposition could penalty from |x| = 1, the appear of probable on the transition of the tentum schemes for effective through them, but at fact, bown ineglect, and the numerous schemes for effecting this object have all proved abstractive, are best attacked with sense as inegliations as not to warrant the further procession of them. The lattern inverted, the art of graiting or propelling it uppears thus to be almost as for from our group, and so distract of atthinum, are exist.

Since the investion of the po-balloon by M. Charles, of Davis, but for improvements of importance have been made in it; and, an angular be forecome from the original simplicity of the invention, what improvements have been made are not improvements in the principle, but in minor natures of datad. The most important importance in the principle, but in minor natures of datad. The most important importance is interested in one affected in the only get of the present contrary by M. Green, well known for the many convended public neverity which has fores much. This improvement contains in the use of only an interest of the contrary of the Charles, and the desiration contrary from the Contrary of the Contrary of the Contrary of the Charles, and the desiration contrary the Contrary of the Contr

One of the principal advantages arising from the employment of ond gas is sommer, the saving of septeme being very great; a flow own arisin, from the general reduction of the gas, in two entails the disclorates,—but he lablom is required to be of assessment larger dismensions thus when green hydrogen is employed for indiction. The original express of construction is their interesting the transition of the granter can also for the haliton is required accepted original express of construction is their interesting. In the construction of the granter can also for the haliton is suffered to the construction of the construction of the granter can be of each gas; and, what is of great removement. If bulleton are restartlying who can dispense the construction of the present in construction of the construction of the great for the great construction of the present in the construction of the great present in the construction of the present in the construction of the great present in the construction of the present in the construction of the great present in the construction of the construction of the great present in the construction of the great present in the construction of the construction of the const

Since the introduction of the use of coal-gas in acronautics, but few, or rather, perhaps, we ought to say, no improvements in the construction of balloons have been made; minor improvements have indeed been made in the

form and arrangements of some parts of the machine, or apparatus connected with it, such as the ingenious method of liberating the bulkone employed by Mr. Green, whom we have already mentioned; but these are all simple contrivances of detail, which in no respect alter the principle of the machine.

With the invention of the balloon we had then obtained the means of floating in the air, and acquired possession of a contrivance for this purpose; which, except its inability to support very great weights, left but little to be desired, when considered as destined merely to support the human body in the air and to move freely with the wind. But the employment of such a contrivance can scarcely be called aerial navigation, and, in fact, only half the work had been done; the ship for navigating the air had been invented; the art of sailing is still unknown. We can scarcely consider camelyes to have succeeded in discovering the art of norial navigation until the acronaut has at his command the means of varying the elevation of the balloon above the earth, and of causing it to move in any horizontal direction at will. Two methods of effecting this naturally suggest themselves; indeed, the art of acrial navigation may be considered (as that of occass navigation new generally is) as divided into two great and distinct branches: the one, comprising the manner of directing the machine by the agency of the wind itself in any direction, either coincident with or different from that of the wind; the other, the employment of artificial means of propolsion, such as propellers driven by steam-engines, or machinery of a similar nature. Of the attainment of a practically useful method of propelling balloons by the motive power of steam we fear there is little hope; and were the attention of projectors directed to a method of sailing ballcons, rather than propelling them, it is probable some useful practical progress might soon be made in the art of aerial navigation. Attempts at guiding bulleons have indeed been made, but, being ill directed, have always failed; and, in fact, the application of the stemm-engine to locomotion not having been made at the time of the invention of balloons, all the early attempts at guiding balloons or increasing their speed were directed by the analogy, real or supposed, of a balloon and a sailing-vessel.

The supposed liberality of the two cases he limentalisely in the trial of rules and relative expelled to indicate, the supposed liberality is consistent and in part and fifteen excitation between the two-a halicon and as higs-appear to have function that the two cases of liberal merely in that of the halicon floating it is nothern of far the obscipt then more. The inimitarity of the two cases is however, apparent table that cares. In the expression of the contract of the contract is not the contract of the contract is contract, and the contract is contract in the contract is contract, and the contract is contract in the contract is contract, and the contract is contract in the contract is contract in the contract in the contract is contract in the contract in the contract in the contract is contract in the contract in the contract in the contract is contract in the contract in the contract in the contract is contract in the contract in the contract in the contract is contract in the contract in

The more recent attempts made of late years have almost invariably been founded on schemes for propelling balloons; and, in a great number of these, the employment of the steam-engine is a principal feature. The objections to the employment of this motive power, even if it should be found possible to avail ourselves of the force of steam for this purpose, would probably prove of such force as to prevent its introduction to any extent. It may no doubt, he urged that, in a medium of so small a density as air, the actual force required to propel a bulloon would be very small, and that this being the case, the size and weight of the machinery necessary to impel a balloon need not be very considerable; and that, therefore, it would be found possible to construct balloons of sufficient size and ascending power to carry the necessary machine. But, were it even so, the necessity there would be of either relinquishing the use of the propeller after a very short period, or of descending to obtain supplies of fuel and water, would be found to render its practical application of but little value. If it be also remembered that to work a steamengine it requires not only an engine and holler, but a heavy weight of water and fuel, even if the engine work but for a very short time, and also engine-men and stokers to work the machinery and feed the fires, the uselessness of the attempt is so evident as to render numerical calculations unnecessary for exposing its fallacy. The lightest form of marine steam-engine in use weighs about thirteen hundredweight per horse-power; and when to this we add the weight of fuel and water contained in the boiler, and that of the men necessary for attending the nuchinery. we arrive at a sum total for the weight, whatever horse-power we may assume as necessary, entirely beyond the power of any balloon to support. For, though we may imagine a balloon of such vast dimensions as to be able to support such a weight, yet the construction of such a balloon would be difficult, and its inflation almost impossible.

But, hereafter, one means of obtaining motive power may be discovered which will enable us to dispense

with the cumbersome appendage of a steam-boiler, and the weight of fuel and water necessary for it. Electromagnetism may, perhaps, stand us here in good stead; but, at the present moment, the recently discovered gun-cotton offers, perhaps, the less hopes of success. The enormous force of this substance, compared with its weight and the space it occurres the abolition of the boiler and all fuel which it will effect, and the fact of no water, either for feed or condensation being required, are ndvantages which make us look forward to a trial of gun-cotton as offering a prospect of greater success than has hitherto attended attempts at balloon propulsion. Gun-cotton might be tried, probably with some effect, on the receil principle of the rocket and the fumific impeller of Mr. Gordon, as well as with machinery similar to the ordinary steam-engine, such as has recently been potented by Mr. Talbot. The force of steam not being in this case applicable as a propelling power, if that of gun-cotton should not be found available, we must seek in another direction for a motive power, which, with a small weight, gives an intense force. The great object of the inventor will evidently be to get rid of a heavy incumbrance, such as a steam-boiler, and to confine his machine within the most narrow limits resultle as to space and weight. The use of gun-cotton in lies of steam, would certainly reduce the size and weight of the machinery, as far as we can reasonably hope to reduce it. Our propelling machinery would then, in short, be a steam-engine working without water, without a boiler, and with but a very small weight of fuel; but, until this substance has been successfully applied as a motive power, its application to ballooning must, of course, be mere conjecture.

There can be no doubt that if a notive power fin for the purpose could be found, some form of propuler would seen be invented capable of applies; the power, with post dects, in the propulsion of bulloons. The numerous experiments which have been made during the last few years with subscarged propulers applied to the accordant result, findly an indenter breight per length. We have converted result, findly an indenter breight per benglies, it was converted result, in each part in the subscarged of the propulers, where they do not be the or of a hallow on words, however, represents a difficult of a reveal per length with the subscarged in the probable of the probable of the probable of the probable of the order of a hallow on which, however, represents a difficult of a preclaim struct, which provides itself in all helion experiments this is a contant, though above, rotation of emittive, descripe the hallow provides and the subscarged of the content of the ballows, and the theory to rotation, it is not effect of the pulse copie to resurt the monit of the ballows, while the object of the realizers and the propulling force is, of course, to increase the velocity of the ballows, not last the consequences over adoptive and to the proper and of the proper and the properties are the properties and the properties are the properties and the properties are the pro

The want of success attending the early attempts at guiding balloons appears to have deterred adventurers from repeating these experiments or devising new methods for effecting this object; and, since the beginning of the present century, nothing of practical ntility has been tried. However, Mr. C. Green, whom we have already had occasion to mention, has broached an idea which appears to be in the right direction, and which will possibly, when modified, be found to be feasible. Mr. Green having remarked, during his numerous balloon-vovages, that at various beiefute above the earth he met with currents of air which curried him in a direction different from that in which the wind was blowing at the time of starting, conceived the idea, if it be possible to keep a balloon at a constant elevation above the surface of the earth, that advantage might be taken of this circumstance; for, by increasing or diminishing the altitude of the balloon, a current of air might be found to carry the aeronant in any direction he might desire. It has indeed, been long known that the wind, observed at the surface of the earth, does not blow in the same direction with the current of air moving at some distance from the earth. This phenomenon occurs not only in our latitudes, but also in the regions of the trade-winds; and several observers, amongst them Sir James Ross, in his recent voyage, have noticed, when in the trudes, small clouds moving at a considerable height above the sea in a direction contrary to that of the trade-winds. It is obvious that if it be true that, at some height or other above the earth, we may find a wind blowing in any given direction, and supposing we can cause the balloon to remain invariably at the same height, we might be enabled to move a balloon in any direction merely by ascending or descending until a current of air having the required direction is met with.

Yarious methods of causing the balloon to remain at an invariable height may, doubtlene, be supposed; but the case actually in mee, manely, that of discharging gan or hallast according as it may be necessary to check a tendency of the balloon to rise or fall, is of every limited application, for the quantity of balloat and gas which can be compleyed in this manter is very small. The power of varying the elevation, or remaining at the same height, would be ready to restrict the contract of the state of t

Mr. Green, however, proposes Mr. Baldwin's method, which is very different from the above. He supposes the aeronant furnished with a rope of sufficient length to reach from the balloon, when in the desired current of air, to the earth: one portion of the rope resting on and trailing along the surface of the earth or sea, as the case may be, while the other end is attached to the balloon or our. If the balloon, from the effects of the sun's rays on it, rise to a greater elevation, a corresponding length of rope will be mixed off the surface of the ground and supported in the air; and in the same way, if the balloon siak, an additional length of rope will be planged in the water or drag along the earth. The result will be that, in the ene case, the same effect will be produced as if an additional quantity of ballast were added to, or a small volume of gas allowed to crouse from the balloon; in the other, the offect will be similar to that of the discharge of ballast from the balloon. It is evident that by this contrivance the balloon will remain at nearly the same height from the ground, the effect of any expansion or contraction of the gas created by increase or decrease of the temperature of the sarrounding air being counteracted by the alteration in the weight which the balloon has to support, and that without any loss of either ballast or gas. This method, however, could scarcely be practicable except at sea, on account of the damage and difficulty its employment would occasion by the entanglement of the rope in trees and buildings; but at sea ne difficulty arising from these circumstances could be experienced, and the experiment is certainly well worth a trial. At great elevations above the earth the weight of the rope would also become so considerable as to require for its support a large portion of the ascending power of any balloon.

One thing is clear, that the friction of the rope on the earth or in the water would records a degree of resistance sufficient to retain is some degrees begood of the hallows, and this would be not to be yet with the jets being advoice, it would be found possible to guide or sterr hallows. We have already observed that, to guide or sterr hallows, it will be to assume that all creates an amoth of creating a relative which players the hallows and man replied that the wind. Sow this is officied by the proposed guide-rope of Mr. Greec; and we may abserve that salars are mentioned as oughful to record to a similar attribe in other to-folials entering ways as a worst.

This extifice is navigation is termed budging, and is employed when weaks are floating down streams or firms when there is no wide. Under and decremations, a wood would be in constant dayoff of being road on shown, misses strong-way could be get on the wood. This is effected in the following names r—It is will known that a mader bolds the ground some or loss frontly, according as in the dischare from the wood is greater or less. In the contract of the contra

At sea, where this idea halds out great hopes of success, the lower end of the guide-rope should be attached to a small loat or float, which would increase the resistance and give additional steerage-way.

The differtities of storring belicous would then be found, we think to be far from inseperable. The rotation of a bulloon about its vertical axis would likewise be found a considerable obtacle to the new of any propelling power, since the rotary motion of the halloon would come the direction of the propelling force to change at each instant. A halloon always notates in this manner; but its notation is above, and the fact is not at comprespecifiely, and only apparent on regarding factolly an object—when as cloud—a town distance from the spectracy.

Mr. Cowell considers the use of the guide-sept on the earth highly objectionable and dangerous, unless it be used at the moment of descent, when it offers many advantages. On the water it would prove invaluable.

when the position of the observer is seen found to change. It is possible that, were a form other than the spherical one usually adopted given to a balloon, this motion of rotation might be very much diminished, if not altogether avoided.

## THE FULCRUM.

Menmier\* has treated this question in a masterly manner; and in one of his essays has analysed the point d'appoir in the air. Ignorance of this principle has caused many mistakes. He easily shows how little permanent equilibrium there can be in the atmosphere for a silken globe, which in respect to it is no more than a nosp-bubble. It is otherwise with acrotatic machine, solid, strongly built, and possessing a power of resistance and motion.

A point d'appui dosse stati in the air; the bird has no other for trising and maintaining tituell' in the atmosphere. The descent of a parachute is checked, because if indu in the air the force of resistance, which is the true point d'appui. The fish floats like an acrostat, by its specific lightness. Though the trivers and seas have their currents, yet the fish, by its form and becomotive powers, can overcome them; and it has been taken as a model in the machines of Soxt, Pauly of Geness, and Mr. Eng., dc.

Mr. Monek Mason, the able and zealous writer, whose description of the balloon-voyage from London to Weilburg we have already quoted, printed in an appendix to that account the following "Observations," which have formed the basis of the articles on aerostation in several of our encycloredias.

Stam-navigation has already shown us that the figures of scientific men are not always to be depended upon; and in this instance their errors have been so clearly demoustrated by M. Marcy Monge (a nephew of the inventor of descriptive geometry), in a work published in Paris, in 1847, "that all who run may read" that the practicability of serial navigation is now demoustrated by mathematred by

## OBSERVATIONS UPON THE MECHANICAL DIRECTION OF THE BALLOON.

To display in its poper obsers the long-constead question of surial navigation, and enable the general reader to form an quision for heavilg as the producilly or improbability of the encouplishment of that not interesting and indeed important of all mechanical desidents, is the object we have proposed to convolves in the following investigation. In the execution of this design we have this to accosacy to ablance the strategies but impossing paths of description for the near team and todous account of systematic reasoning. But the truth is, the heighty inclined properly subside of sole or lower body extransists. These used of a ballow autificably peopled through the art in the properly ablance of the art in the properly ablance are required, namely, to determine the expectations of the entire on a different teaching to the art in the art in the properly ablance are required, namely, to determine the expectations of the entire of the art in the properly ablance are required.

The recondite nature of the principles upon which it is based does not, however, by any means involve the

General Memoir was chilatequicha della relazione, memo tibra a the Mar per de Francis and met of anno develope in the chilay of American Section 4. He had produced by non al Corbornig in the chilay of American seven in perticular chilages and the produced of the produced of the corporation of the corporation of the section of the super-consensate laws for special content of the super-consensate laws for special content of the super-consensate laws for the corporation and content of the super-consensate laws for the corporation of the super-corporation of the super-consensate laws for the super-consensate laws for the corporation of the super-consensate laws for the

them to the Minister of Wax. They were afterwards sent from Paris to the school of Mots, where they may still be seven. A porticilor of designs, an explanatory amphiles, and the Memoir read at the Academy of Sciences in 1733, are the only important works of his on sevenatones owe entirely. Among the designs is the outlines with ministen measurements of a magnificent ellipsoidal corostal, the longer stails being of incirc, and the shorter of incirca.

It was designed to carry thirty men, with provisions for sixty days, M. Marry Monge in bis Etudes our I Accessation thought that he could not aid the Science of Accustation better thou by publishsecondly for a like abstracement in the combect of the inquiry day are designed to report; nor, indeed, would not another than convolved with the purposes we have in vice. They are not the issuemed but the ubstract what can always are intended to enlighten. To show who are themselves wrent in the existence that can relate the second of the remarks which a precision assumed to enlighten. To show who are themselves wrent in the existence that the upon the house properties of a few remarks which a precision assumed to the properties of a few remarks which as precision against new with the star has nepturily matched us to supply) and possibly present achieves precision. In short, with which they are not have precisely matched us to supply) and possibly present achieves conceives. We in the original properties of the contraction of the contra

With this view we have studiously endowed to avoid the employment of all mels terms of art as are not in use in common parlane, and etherwise to adopt a right and method as familiar and conscious as i consistent with the clear exposition of the subject we have taken apon us to dilustrate. In accordance with those principles, our intentions to the following invastations are to accretion and define—

- L. The obstacles which interfere with the active progress of the belloon.
- II. The mechanical means required to surmount them.
- III. The natural power by which these means are to be put in operation; and
- IV. To point out certain regulations and restrictions by which they must be governed in their application in order to be really available for the purposes for which they are designed.

By this method of preceding, one important exectation at any rate we shall have established; namely, what are the means by which also the direction of the halloon can ever be accomplished. Under what particular form those means may be applied, or whether indeed their application is within the reach of those powers which Providence has placed at our disposal, we leave entirely to the judgment and ingensity of the reader hisself to determine.

(L)

The moment a hillow has set off its last hall spec the shill cards and low restrict his to become of the six it becomes at even, sale, in the absence of all flexing interference, completely described to the same impoles and affected by the same impression as these which govern the disposition of that element inself. To the extent amount of these, the varied and incentiates much of the samely of the nordinary described to be shifted by the interference of the similarity that involves the question of aerocatic galaxies. The new isotrally of the nordinary described to the similarity that involves the question of aerocatic galaxies. The new isotrally of the nordinary described to the similarity of the nordinary described to the part of the nordinary in the new isotral to the requisited to the part of the new is inconsiderably question in the product are carriedy similarity. In the same, force the attraction, has to be exverose by scatter (the proistance of the attraction) has to be exverose by scatter (the proistance of the attraction) has to be exverose by scatter (the proistance of the attraction) has to be extracted as the same of the state of the scatter of the state of the scatter of the state of the state of the scatter of the state of the scatter of the state of the scatter of the state of the state of the scatter of the state of th

Were it not, therefore, for the rate of the medians and the obligations it impross upon the conduct of the operation, nothing would be simpler nor more certain than the mechanical direction of the bulloon. Action and reaction being invariably equal, any searchine of the proper means, no matter low alight, must inevitably produce a determinate advance in its position; and that, without any regard to the direction of the median in which it is covered. It lie term that where the distancements between the residing rowers of the means

2 T 2

In combining the case of a body elementing through the six under the exercise of means of populsion interest in likely the reader will beer in mind that neither the rate and direction of the modellum in table it is coveryed in any way affects in condition, or considers it to suffer any act of violexce beyond valut, with the mac executions on in part, it would experience were it to neck to obtaine only in the part of the popular in the part of the part of

imptense current, is likely to be a very different one from that of the same below cannier carriering the assessment with the advantage of the wind to record in centrions. The distinction, between, as the ast the continuous of the body is encoured, in a follow man, Differing in this respect from other horsowise machino, all the forms by which it is e-peried upon are determined by the com-atcrition above, proportioned to the mix and opposed to the direction which there were it is contained.

of propalsion and those of the machine whose morement was to be the result of their operation was extremely great, its actual progress would be extrustly multi-josse, however, little as it might be, would positively be realised, and the only question would be how far the advantages obtained were worth the exertions employed to

With an independent metric, however, in the medium of its conveyance, the grishness of the hallons to say extent is by no means a necessary consequence of any exercision of ferow with which it is might be possible to invest it, and this it is which constitutes the great difficulty by which send an explaint in the large of the property of the large of the

The novements of the atmosphere, with which above we have here any concern, are, as we all known, most variable quantity, comprising within their limits atmost every degree of velocity with which we have any practical acquaintnee, and percuting ( $\infty$  for as we have any right to conclude) all those regions which, from their preximity to the earth, constitute to reverse where of the hallow

I am aware that an opinion is very prevalent among aeronauts, and which is also favoured by some meteorologists of distinction (especially those of Germany and France), that all these changes are confined to the lower regions of the atmosphere, and that beyond a certain elevation, a state of perfect, or at least comparative, tranguillity may be looked upon as the natural condition of the ethereal space. To what to ascribe the origin of this opinion I am totally at a loss to conceive, nuless indeed it may be to that innate disposition in men to believe what they desire to be true, and to adopt, without questioning, whatever appears to favour their particular predilection. The supposition, however, is by no means borne out by facts : en the contrary, many instances might be addresd from the registered annals of the art, in which considerable excitement has been found to prevail in the upper regions of the atm-sphere; at a time, too, when, comparatively speaking, no motion whatever could be perceived in the portions adiscent to the surface of the earth. In one of the two ascents which Signer Lunardi executed from Herict's Hospital Grounds, at Edinburgh, notwithstanding a state of perfect tranquillity uniformly prevailed below, the rate of the billoon's course at the greatest altitude to which he arrived exceeded seventy miles an hour [see p. 106 of this work]. On the 28th of April, 1802, Captain Sowden, in company with M. Garnerin, ascended from the Ranelach Gardens, near London, and after continuing at a very considerable elevation, in threeguarters of an hour descended near Colchester, a distance of sixty miles; having thus accomplished a rate of motion equal to eighty miles an hour, although scarcely any could be perceived at the immediate surface of the earth [see p. 115]. A still more striking proof of the existence of rapid atmospheric currents at excessive elevations, and one which appears to be decisive on the subject, is afforded in the second ascent of M. Gay-Lussac from Paris, in which a very considerable rate of motion was accomplished, although the whole of the voyage, with the necessary exception of the ascent and doscent, was conducted at an altitude bordering upon twenty-three thousand feet, the greatest to which any balloon has hitherto been known to arrive [see p. 120]. It is unnecessary to multiply examples to disprove the truth of a general rule; enough has already been addresed to determine the fact that, at the greatest elevation ever attained by man, very considerable atmospheric currents have been proved to exist. What may be the case at a still higher elevation we must leave to future experience to determine; in the mean time we must continue to regard the atmosphere as we have found it; and, in our treatment of the question before us, consider the aerial vehicle as liable to the influence of those forces which have hitherto proved superior to all the efforts by which it has been attempted to subdue them.

These forces then are as I have said before, of a very variable disposition, embracing within their limits

almost every degree of motion with which we are practically acquainted, from a state of perfect quiescence to the enormous rate of one hundred miles as hour. Such a rate of motion, it is true, is very uncommon; and, in our climate at least, of such rare occurrence that it could not be imputed as a valid objection to any plan for the stuidance of the balloon, that it was not calculated to meet so extreme a case as that which we have here specified. The average rate of the wind in these climates (which we have chiefly in view in the following treatise), may be said to be about twenty-five miles an hour. This we are enabled to determine, not from the observations of the meteorologist alone, but (what is more to the point, because founded upon experience in a part of the atmosphere with which we have more especially to do), from a consideration of the average rate of Mr. Green's serial excursions, deduced from a series of two hundred and ferty-nine voyages, executed generally in the most favourable periods of the year. From this we learn that twenty-five miles an hour \* is the mean rete at which a body floating in the atmosphere may be expected to be transported; and with resources to that extent would it be necessary to be provided, were the severe amount of the obstacles to be taken as the measure of the means to be employed in surmounting them.

But the average amount of the antagonist forces, however it might be deemed a sufficient gauge in the case of other locomotive machinery, could by no means either predently or properly be admitted as an adequate allowance in that of the aerial conveyance. The powers by which the progress of the balloon is liable to be affected are so vast, that were she only provided with the means of resistance upon so limited a scale, the deficiency in extreme cases would involve consequences far beyond what the exercise of her own resources could ever enable her to retrieve. Ne argument can be drawn from a consideration of what would be reckened sufficient, in other cases (in marine navigation for instance), to sanction the admission of the same scale whereen to measure the means required for the guidance of the balloon. The extreme rate of a current at sea, never, I believe, reaches ten miles an hour; † that of the atmosphere in motion, I have before observed, occasionally amounts to one hundred miles in the same time. The actual consequences, therefore, to a ship furnished with means equivalent to half of what she might have to encounter, would be but triffing compared to what a balloon would suffer in a similar emergency and similarly provided to meet it. Each, it is true, would lose but one half of her way; but the half of her way lost to the ship would be only equal to five miles an hour, and the result but the retardation of a few days at the utmost in the date of her arrival at her destined port. The loss of half her way to the balloon would amount to fifty miles an hear, and the probable result would be that she would have reached the antipodes ere any circumstances might have occurred to favour the recovery of her course. \$

From the consequences of an inadequacy to contend with superior forces, the balloon again has none of those shifts to relieve her, such as oblique sailing, tacking, or even temporarily suspending her progress, to which the mariner can resort in similar cases, and which enable him to put up with a comparatively inferior power. If the force which opposes the balloon she is mable to subdue by direct opposition, she must be content at once to submit to the consequences of defeat. This is the more necessary to be insisted more because I have generally found persons resort to such arguments, in order to bolster up a feeble schemo of aerial navigation; flattering themselves that, although they might not be able to accomplish a progressive motion in direct opposition to a powerful current, they would be able to take an angle and traverse it obliquely, as a ship tacks against a wind; or, should that fall come to an anchor, and thus remain neuter during the predominance of the powers they are unable to contend with

The expedients, however, to which they advert are totally inadmissible, and, with regard to the former, absurd. Tacking, as practised at sea, is an operation requiring the presence of two independent media, and may be defined, the taking advantage of one of them (the water) to secure a direction for the exercise of the force obtained through the intervention of the other (the air); such a resource is as inefficient with the aid of one medium only, as the action of the male screw would be without the female, or the lover without its falcrum. If a balloon cannot

course of his first 200 acrial excursions, a very accurate computa-tion enables him to fix at 6000 miles; and the time consumed in the performance at 240 hours. The former of these two quantities dirided by the latter gives the quotient above mentioned.

<sup>\*</sup> The total distance which Mr. Green accomplished in the | should they be, here taken into account; inammels as, from their very nature, alternating successively in two opposite directions, they invariably neutralise their own influence every twelve hours, and cannot really be said to have any effect upon the course of a would whose voyage is intended to endure for more than half the

<sup>†</sup> The currents proceeding from the action of the tides, which | above period. occusionally accomplish a much higher rate of motion, are not, nor I See Note A, by M. Menge, at end of this paper (page 282).

make head against a current of air in direct opposition to its course, it only aggravates the mischief by any attempt to meet it obliquely." 1

With regard to the other expedient alluded to namely, the temporary discontinuance of the course of the balloon whenever the condition of the atmosphere should happen to exceed its powers of resistance, the idea is replete with practical impossibilities. The moment a balloon is inflated, the worse the weather the more urgent is the necessity for hor immediate departure; every moment she delays teems with risk, and should the forces in question be excessive (which, indeed, is the very contingency contemplated in our argument), the only chance of her security is in the air. These are objections which the inexperienced reader cannot be expected to appreciate, but which all those who have any practical acquaintance with the details of the art will be rough at once to admit. If they are conclusive against the possibility of adopting the step here alluded to, with a balken of the ordinary simple principle and advantageous construction, how much more so must they be when applied to one fitted up with the vast and cumbrous apparatus required for its propulsion, increasing the liability to damage exactly in the ratio of the inability to resist it. The expedient, in short, is one which never could be resorted to except when it was nunecessary, and never could be necessary except when it was impracticable.

The extreme rate of motion with which it may fairly and reasonably expect to have to contond, must, therefore, be had in view in all schemes which propose to render the balloon a certain and serviceable mode of transport, and at any rate as much of it provided against as shall leave a deficiency within the reach of her own resources to repair.

From a consideration of all the bearings of the case, and desirous as much as possible to favour the hopes of au aerial navigation, I am bound to say that unless the balloon can command a rate of motion equal to thirty or thirty-five miles an honr, it caused chain to be considered as a mode of transport applicable to useful purposes, or on a par in point of advantages with any of those whose services it might be expected to supersede.

Now all this velocity, it is evident, cannot be accomplished without the development of a certain force of resistance, which is in fact the very measure of the difficulty we have hitherto been labouring to ascertain. This resistance is chiefly of two kinds; the one, the direct impact of the atmosphere.—the other, the friction occasioned by the action of its particles along the surface of the opposing body; both of which are determinable as to their amounts by a consideration of the form of the object and the rate at which it is impelled.

1. The fermer of these, the direct impact of the atmosphere, is by far the more serious obstacle of the two, and that against which the efforts of the serial engineer have hitherto been almost exclusively directed. In a previous page [see p. 161 of this work], we have taken some pains to point out in what manner and to what extent the form of the body is capable of modifying this force, and have within certain limits established a rule by which to determine the comparative amounts of atmospheric resistance upon bodies opposing plane and conical surfaces to its action. To avoid, therefore, entering anew upon the same ground we shall only observe generally, that from onehalf to one-third less exposition is realised by a hemisphere, or cone of equal altitude with its base, in passing through the air, then would be experienced by a plane surface equal in extent to its largest section, taken at right angles to the direction of its course. The conditions of this latter force (I mean, of the resistance afforded by the atmosphere to the impact of a place surface), have already been pretty accurately investigated, and its amount. corresponding to the rate of the medium, determined by experiments ingeniously devised and carefully instituted.

clusion more apparent :-



Suppose a body freely suspended in the air and capable of across ig a rate of metion equal to 4m miles an hour, were to set out from the point A, with the intention of proceeding in the direction

. The examination of the following Diagram will render this con- of A R, against a wind moving at the rate of breaty miles an hour; by the time it had attained the point B in the body of the atmosphere, that point itself would have been transferred with the program of the medium to a spot corresponding to C upon the surface of the eart the course of the body would be represented by the line A C, and the loss of way would be equal to the difference between the two rates. Were the body, with a view to avoid the direct opposition of the air, to take an angle and seek to advance in the direction A D. by the time it had reached the point D in the besty of the med that point would have been transferred to E on the surface of the earth; the course of the body now would be indicated by the line A E, and the station it had required would be further rem the distance e E from the point B, which it had first nimed at, than

if it had proceeded thether in direct opposition to the wind, † See Note B, by M, Marcy Mongo, at the end of this paper (p. 233). for all degree of the sub, form one to one headed unlies as here. It is exactly accessary to cleave, that whether the impact be effected by the materia of the body or singly that of the notionic, the result, as far as omerone the amount of form periodos, will be the same; and that, consequently, the presence of the attemphene, as distinguish in the phenomenous of the whole, hope to be them as a cover to move or first resistance which, at the amount distinguish in the phenomenous of the whole, hope to be them as a cover to move or first resistance which, at the amount of the contract as determined by the representant of Konesa Rious and Stancton, has been subjected to the con-

From this Table it will be seen, that for every square fact of plane surface called into action at the rate of one mile an hour, the atmosphere exerts a resistance equal to five-thousandths of a pound avoirdupois; a force which is found to increase accordingly with the squares of the velocities under which it is exercised. To give some idea of what this force would be in practice, let us assume the case of a balloon of known dimensions; that, for instance, belonging to the managers of Vauxhall Gardens, with which the public are no doubt by this time pretty well acquainted. This balloon is a spheroid of about sixty feet in height and fifty in breath; in computing its powers of resistance, however, we shall not much err if we regard it as a sphere, whose diameter is equal to the mean of these twe quantities. Upon this hypothesis, then, the plane of its largest section would contain about 2372 square feet, the resistance upon which, however, owing to its particular form would, as we have before observed, be only equivalent to that upon a plane two-thirds its dimensions, or about 1581 square feet. Multiplying this sum by the amount in the subjoined Table corresponding to any degree of velocity, we shall have at once, and with very considerable accuracy, the amount of the whole force by which its progress at that rate is affected; or, in other words, the resistance it would offer to the atmosphere, or the atmosphere to it, were either to be arraved against the other in motion at the rate in question. Thus, at the rate of thirty-five miles an hour, which we have already agreed to consider essential to the successful progress of the balloon, the opposition experienced would be 1581 × 6027 = 9528 pounds avoirdopois, or upwards of four tons and a quarter.

The proportion between the force here compand, and the longuat power of the hallow might, it is true, be unsimilarly stready, by the adoption of sauther from far the containing word, which should fined to an electronistic contribution to the impact of the strong-term; such as sufficient as indeed would be accounty to reader it works and the stream of the stream of the stream's property of the force of the stream's with one overlap of the force of a cylinder capital the stream's with case, we as displand in length for times the disnoter of its transverse section, we should have a word equal in longuage to the former (multitige that difference in the weight of their respective correcting) presenting an antire resident great of the order of the Zero have, bewere, where the averagement of the ports is, I believe, the most between the other relations of the interpress of the regarded words of the ports in I believe, the most between the contribution of the long of the stream's contribution of the ports in I believe, the most between the contribution of the long of the stream's the principle would be qualled freight and the contribution of the long of the stream's the stream's contribution of the ports in I believe the contribution of the contribution of the long of the stream's contribution of the ports in the stream's contribution of the ports of the ports of the ports of the ports of the stream's contribution of the ports of th

2. To counterbalence in some degree the advantages, which, it is evident, here accurs from the adoption of a fermion less from loss frowmable to the direct impact of the atmosphere, nother from remains to be considered in the prices which is engestered between the services of the lody and the particles of the medium is which it moves. The introduction of this force is, in fact, the consequence operators of the amengments by which the other is sought to be available. Priction being the resistance carried by the possage of particles over and alony a given serders, in contributions to the attractions of the contribution of the attractions of the properties are the ficilities of the contribution of the considered by their implants quality in the articlest jurious in properties are the ficilities.

 Tanz, showing the perpendicular frees of the wind under different velocities, in pseuda modularyois, on each square fact of plane surface, computed from experiments of Masons. Eccur and Saxtaron.

Mine per Hour.	per Feet.	Miles per Hour.	per back	Miles per Houg.	per Foot.	Miles per Hour.	per Foot.
1.	-005	- 8	-315	35	6-927	70	24-160
2	-030		*209	40	7-873	75	27-646
3	-044	10	1492	43	9-563	140	21-410
- 4	-679	15	1-107	59	12:300	85	33-550
5	-123	19	1-948	5.5	14-6-5	50	29-830
1 6	-178	25	3-675	69	17-715	23	41-401
7	-212	39	4-423	65	20-794	100	49-200

The terms of the swie snawering to the rate of the wind at 6, 7, 8, 9, 55, 65, 70, 75, 85, 90, and 95 miles on hour, which have hitherto been cultical, are here supplied.

for the latter openion become benomed by the particular contraction of the appoint, surfaces. If an open unabrellable belief pair formation betwoish the which after fine the effective daughted with the that of impact will be label pair formation the twolsh of the fire directived, and effective daughted with the that of impact will be consequently depend with the contraction of the contracti

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To the moler not trend in the physical science it may reloas some strange that a relations of such importance as to merit the consideration we have between deep in a should be explain by their generated by the attribute of the particles of an observed finite of an observed finite of an observed finite of an observed finite of the shight consistency as that of the nodium of the serial conveyages. The inflores, heaven'd, attraopheric fertices on the motion of both subject to experience, it is magnetizably very considerable, and often productive of effects in mose where it coughe subject to experience, it is magnetized with the attraction of generation, determine the course of the arrow shot from the low, or the operaturated from the low, or the operaturated from the low, or the operaturated from the low of the observation of the analysis of the observation of the analysis of the observation of the analysis of the observation of the

(IL)

To enable the billions to minimize in cores in the text of the opposition we have just been embeworing to compute—on, more properly, to commond a rate of notion where the opposition in question is the index as well as the result—it is absolutely measurey that it should be provided with the means of creating a meetion in the arrangement of the computer of the common trivial term to connect rate in equipment; without a resulting a state of the common trivial and the common trivial and the connection is the computer, without a resulting which the habous itself is inlike be a effected at the rise required, they will not wrill to establish a progressive motion independent of that of the medium is which they are enterior.

There are, I am aware, other means of investing matter with aution holds that which proceeds from a mention in the softening of enveryance; manage, by a resistance, parameted inherently and described in a given directive by the peritoider construction of the parts. Such, in fact, is the form by which the ascent of the skyreduct, but meaning of the cames half, the operation of the pians and collision, and fault, the imprecondischarge of gas or stora, however different may be the surried puse by which they are fort adults has social, are all conceptions. If no immediately, however, of the principles are which they all at, with the other constitution of the immediately, however, of the principles are which they all at, with the other constitution, and consideration, and materian the limitation which which we have cannot due to prospect of serial navigation to the indepter conditional terms of the constitution of the constitution of the contraction of the constitution of the constituti

We have shouly seen how completely all stansplaries resistance is absent from the natural curver of the labbon; how entirely the mations of the way bolice oxision, when unimposed by the interfection of any ferring agents. From this it will be evident that no simple imposition of the parts, in the form of sub or otherwise, becover effective they may be in number surgication, can be of the sightest avail in the present question. With rothing to act upon them different from what acts upon all the rate of the help belone, they can be considered in no other light that as merely so many visitions in the first of the serial nuclains, and one of no more services in determining the progress than care, simply resting in the water without causies, would be in effecting the course of a boat at it divides pass the loss and the ways.

The reaction in question can therefore, it is evident, proceed from no passive arrangement of the parts, but must be actively engendered by the excesse of a force distinct from any to which the simple progress of the body lived is acquible of giving rise. To this effect a certain extent of surface must be arraved in motion so as to incinarupon the algioent strate of the surrounding medium, and in the opposition if measurement, establish, so it were, a fortherms for the inverse play which the nonline is the substantially populded. These whethere for the inverse play when the nonline is the substantial populded. The other whether for the injury or or captive of nam may induce him to order his devices—whether in the gaine of care, wings, or publics, designed to operate by referenced personals, restation, or by continuous impression, as exemplified by the involutional of applial usid or wants formed after the fathion of the serve—all resolve themselves into this one principle; namely, the impact at or carfirm and order in resident goalcines.

In the construction of this force, therefore, two chanestry principles prove at thousewho for consideration; another, the order and the motion and result in the motion and result in the motion and result of a given among the surprise of the motion of a given among the result in the surprise of the surprise of a given among the effect, as a given among the property of short of an anisotical to the disconsists of the surfaces in quantitation of the surfaces in the surfaces of the surfaces in the surface of the surfaces in the surface of the surfaces in the surface of the surfaces and the surfaces of the surfaces and the surfaces of the surfaces in the surface of the surfaces and the surfaces of the surfaces of

But though a limit is the singuod upon the extent to which an augmentation in nir may be made to empty, a deficiency in the root of the importing apparts to such limitation exists in theory to the extent to which an increase in the root of laugust may be made to compression for an abridgement in their dimensions; the smallest amount of surface being equalsed or finalizing any amount of restincts providing to their dimensions; the smallest associated in properties to the dimension. He made to the score of th

1. With regard to the source of the impelling surfaces, therefore, one important point is strongly analytically, analytically consistent of the surface o

In preceding, however, to compiled this rate of motion by the curries of the mechanical masses we have believed index on securities the appears, consoler frow become developed, tessing in painty their efficiency and impractively calling first a further accession to the velocity with which they are required to ext. This force, which is precedy analogue to the "best water," between it as in the one of versels impaidly about preceded from a condition, induced in the state opening between the impelling merican themselves, whenly the adjustent water of the impelling merican the materials, whenly the adjustent which is adjustent which is adjustent which is adjustent with the precedent in less the manifest of the state here within the operation has been conducted.

The explanation of this process in cutrency image, although the circumstances by which it is attached are no complicated as to believe any study to clearly that the perior amount of the obstruction. In the temportum, as in all other fields, clearly on some clearly as certain uniformity of condition necessarily obtains. Whenever this uniformity pages to be distributed, other by natural ones or the interference of forning agantic fam. By present one, by there proved notes by the propiet section of large remaining planes) a general needlessy is immediately manifested in all the neighboring parts to read in all needless to equilibrium; in the course of which all the use opystopies are everby, and its many the contract of the course of the

offect produced as walk attend the exposure to a natural current of six. The consequences of this distribution upon the propose of the ballson are to appear to now elegistics, although the extret to which it would be necessary to increase the speed of the inpelling authors, in order to construct its influence, and enable them to reveals the required amountant, would not be possible without a test apprinted precedibly to ascertist. Press or critical consideration of the several circumstances of the case, however, I do not bointer to conclude that an amountaint of all to the thirty or cert in the near of the inspelling genes would not be more than smooth to compensate for the disderinations under which they labour spee this account, and place the machine, as for as regarded the officing of the sount, pour a per vist what it would be were to seek otherwise this natural propose of the sound of the section of the

To the sufficiency of this ordinate, however, another consideration is necessary; assorb, that this impact he mointended at the ran populoid throughout the whole pried of the operators: in other works, that no interral or internation is allowed to his picks in the series by which it is generated, whereby the velocity be loss at any one pried than what is materious to be exceptionally to the control of the propers required. The necessity for this origination will appear job ones readily when we consider that the restance experienced by the haltons in at the noise for the improvement of the propers of the restance of the propers of the series of the first proper job ones readily when the consideration of a state-noise is all since the series of the impelling agasta, a temperary secondary in conferred upon the opposing foreus, and a corresponding relation excessional in the legency of the substitute. To direct this deficiency and exercise a given amount of velocity in all schemes in which the agents of the propersion operate by relativately reveniend (see exemplified in the conservation of the propersion of the length to the propersion of the confidence of the velocity in all schemes in which the agents of the propersion of the which they are required to extra propersion of the propersion of the confidence of the propersion of the propersion of the confidence of the propersion of the confidence of the propersion of the confidence of the propersion of the propersion of the confidence of the propersion of the confidence of the propersion of the confidence of the propersion of the propersion of the confidence of the propersion o

2. When a body is set in motion by the exercise of its agents of propulson, whatever may be the proportion the resisting surface of the one-bars to their of the other, but the difference between the rest at which their impressions are effected, the amount of resistance experienced by each will be invariably the same. Thus, if an individual scate in the or of a balloon operator upon the adjacent atmosphere employ by mean is a larly Ma, as not in of motion, however inscardly one-great contraction of the other contractions are considered in the extraction of the other contractions are considered in the extraction of the latter; the output difference being that in the one case it is none-tracked upon a market with the other of the latter; the output difference being that in the one case it is none-tracked upon a market within the other of the latter; the output difference being the other of the other case of the contraction of the other of the other case of the contraction of the other of the other case of the other other of the other case of the other other

This result, as we have before had occasion to observe, naight (circumstances permitting) be attinised equally by a mollification of this superfices themselves, or of the raise at which their operations are conducted. Prome with has, however, been established in the preceding section. I think it will be readily convolved that, substitute goven the possibility of the scoopinilistient of the society there assigned to them, we should not be implicit in locking to that quarter for any further enganesations by which to enable us to dispease with any percise of the dimensions of the properties generated in a fast near word also assessing to the generation of the required sections. Now, the raise of the score of the section of the required sections. Now, the raise of the score of the section of the required sections. Now, the raise of the score of the section of the required sections. Now, the raise of the section of the required section of the score of the section of the section of the score of the section of the score of the section of the secti

It is true that we have needinged a nerch higher net of motion to the mechanical magnet of the population than the styrcides to the mechanical respect to the product does not the terminal velocity of the belloon their if the men of this discrete. Insert, we become the velocities the elegant to the product of the sub-interest relations, however, being the reduction in the result of the sub-interest relations, the sub-interest of the production of the same levels, in the collection of the same levels and the collection of the same levels and the collection of the same levels and the same levels are the same levels are the same levels and the same levels are the same levels are the collection of the same levels are the same levels

In determining, however, the size of a surface,\* by which a given amount of resistance is to be generated at a given rate of motion, regard must be had to the form and structure of the parts by which the impact in question is to be effected. Upon this head we have already had occasion to comment rather largely on another occasion, and more slightly in the first section of the present treatise. From what has been there stated, it appears that in creating an impression upon the atmosphere, a plane (and, a fortior) a concave) surface has an advantage over one of a convex or conical construction, varying according to circumstances from one-half to one-third of the whole amount. To that extent, therefore (were there no other obstruction to the progress of the balloon than that arising from the direct impact of the air), might we expect to be able to reduce the proportion between the superficial dimensions of the impelling agents and that of the balloon, in favour of the former. From the nature of the prooccling, however-the complicated construction and extended lateral surfaces of the balloon, modified as it would have to be to suit the purposes of nerial navigation - a considerable amount of resistance, consisting both of friction and impact, would be developed beyond what a calculation founded upon a consideration of the shape and area of its createst opposing section would lead us to infer. To meet these accruing demands an augmentation would have to be made in the relative dimensions of the impelling agents, which would remain to be determined by a reference to the particular conditions of the case and the aptitude of the parts to perform the functions allotted to them. Presuming, however, that as far as the forse of the parts are concerned, every opportunity would be taken to turn them to the best account—that the surfaces designed to effectuate the resistance and those whose object it is to evade it would be constructed in the manger most favourable to the interests of each --we may set it down as conclusive that from two-thirds to three-fourths the actual size of the latter would be necessary to enable the former to generate by their impact an equal quantity of resistance.

In addition, however, to the resistance occasioned by the simple progress of the balloon, there is another obstruction which claims to be provided against by a further extension of the proportions assigned in favour of the surfaces of the impelling agents. This obstruction arises from the necessary opposition experienced by the parts of the latter in the act of recovering their positions, preparatory to the repetition of the stroke by which the propulsion of the bulbon is accomplished. Thus, for instance, supposing the machinery employed for the purpose to partake of the nature of the puddles of the steam-vessel, rotating upon an axis, while one portion of the apparatus is impinging upon the atmosphere in a direction furoscuble to the end in view, another is inevitably impinging in a direction precisely opposit, and with an effective velocity exceeding that of the former by a quantity equal to twice the actual rate of the balloon at the time. This is a conclusion which can never be entirely avoided. No matter how ingeniously devised or how perfectly constructed, a certain amount of surface must ever be presented to the action of the atmosphere in the manner above mentioned, and operate more or less to detract from the value of the forces which it is able to command. How much it would be necessary to extend the dimensions of the impelling agents to counteract the effects arising from this obstruction, experiment alone could accurately enable us to ascertain. As a conclusion, however, which though not expressly deducible from actual calculation is fully warranted by a consideration of the case in all its hearings, it may be laid down that, in order to overcome the resistance occasioned by this in conjunction with other obstructions of minor importance (but which in our general view of the subject it is not necessary at present to particularise), the area of the impelling planes should at least be equal in extent to that of the perpendicular opposing surface of the whole machine itself. Thus, for instance, in the case of the Vaughall balloon, before quoted, in order that the impelling agents might be able to confer upon it the rate of motion specified

The six of a surface in plattice to the presence of measures, which is the same in which is here was I, is a plattic to presence of the flow of the properties of all the presence of the flow of the presence of the presence

relative magnitudes and puttient, the degree of shelter they obtain and the state of the racelium when it has received them—more too tages to permit us to assign any general rule but that of experiient, whereby to determine the exact share they may bette in the operation, and how much about the added apon that some to the sizeof the order to which that rune to be matched.

<sup>†</sup> The medium virtually reveding as the body advances, the amount of its velocity (= the rate of the balloon, will have to be deducted from that of all boldes proceeding in the man direction and superabled to that of those proceeding in a contrary car. The sum of there has quantities (= here the rate of the balloon), exsittates therefore, the difference between the rates of impact of the parts of the medium proceeding is opposite direction.

as rescutial to the success of the operation, they must present to the continuous action of the air an extent of plane surface conal, at the least, to sixteen hundred square feet,

In assigning this proportion to the dimensions of the resisting surfaces, it must not be forgotten that much of its sufficiency will depend upon the condition with regard to continuity or compactness of the parts by which the impression of resistance is effected. A given extent of surface, distributed into several portions, is by no means productive of the same amount of resistance as if it had been disposed in one uniform plane; neither is one whose contents hear a smaller proportion to the line that bounds them equivalent to one of the same dimensions within the smallest amount of margin by which it was possible to be enclosed. How far again this circumstance would operate to affect the proportion in question, in the absence of actual experiment, can only be conjectured. Regarding, how ever, the essential conditions of the case, such as we have they must be—the uniform bulk of the bulloon, and the necessary disjunction of the parts by means of which it is to be impelled-there will be, no doubt, something to add on this score to the allotted dimensions of the latter, which, for the present, we shall only consider as contributing to support the necessity for observing the proportions we have before laid down.

#### (III.)

To put all this machinery in motion, and confer, as it were, animation upon the lifeless mass, a certain satural power in required, the amount and conditions of which it becomes our next duty to investigate. If rapid motion, independent of great force, or great force apart from rapid motion, were all that was sought to be established in the agents of the propulsion, but little difficulty would exist in appointing the means by which it was to be accomplaced. By a proper combination of machinery, the smallest conceivable amount of force beyond what is necessary to overcome the inert resistance of the parts themselves, may be so multiplied in its efficiency as to be made to conduce to results in either extremes limited only by the nature of the materials upon which it has to set. A single individual exercising a force equal to one hundred pounds only, by the intervention of a system of six wheels, the circumferences of each bearing to those of their axles the ratio of ten to one, might be made to raise a weight of a hundred million of pounds, or nearly forty-five thousand tons; while, by reversing the action of the apparatus, a rate of motion would be communicated from one extremity of the machinery to the other, a million of times greater than that of the power itself by which it was generated.\* It is only where both are required to be included in the same operation—where the resistance and the rate, as in the present Instance, are both terms of the same proposition - that any limitation exists with regard to the results, or any obligation is imposed upon the means by which they are to be attained

To those who are acquainted with the principles of the seiences concerned in the case, this conclusion will be at once apparent; for the benefit of others it may be as well to observe that, as it is only by the sacrifice of one or other of the constituent principles of the momentum they are required to communicate (either the velocity or the quantity of matter) that the mechanical powers operate in varying the result of the original impression, whenever a limit is assigned to the extent to which either of these principles may be reduced, a limit is likewise assigned to the advantages the mechanical powers can confer, which draw their influence exclusively from its reduction.

To apply these observations to the present question, we have already seen that in order to impel the Vauxhall balloon through the air at a rate of thirty-five miles an hour, a rate of metion in the agents of the proposition count to fifty miles an hour is required, generating a resistance equivalent to the weight of nine thousand five hundred and twenty-eight nounds, or nearly four tons and a quarter. If, instead of this double obligation, it had been simply required to effectuate a resistance equal even to one thousand tons, or a velocity of action amounting to as many miles an hour, the object might easily be accomplished (barring the imperfections of art) by the well-directed effects

ten inches, and these of the axles one inch, then multiplying the former successively into each other, we shall have 10°=1,000,000 as the value of the leverage in favour of the power, and one (the product of the continued multiplication of the axies), that in favour of the weight. Taking then, as above, 100 perceds to be the power of the individual, we have 1 : 1,000,000 : : 100 : 100,000,000, or consentat more than 44,642 tens, the weight he would be able to suctain. The velocity, however, being decreased in proportion to the augmentation of the weight, as much as the latter green's the

\* Supposing the absolute radii of the wheels to have been | amount of the original impremion, so much will the rate it moves at full short of that of the generating force. In the present case this is a million-fold; consequently, such will be the diff-conce between the rate of a point in the circumference of the first wheel and that of one in the circumference of the last axle. Supposing, then, the influence of the power be suspended or removed, the swight, in its prepandenance reversing the action of the marchinery, would conmunicule to the locus of the feeter a velocity a million-fold greater then that with which it was, itself, at the time endowed,

of a single individual. As it is, however, no such conclusion in scoosmey; the mechanical multiplication of the original improvise by the securities of the section of the section of the section of the confidence of the section of the section of the section of the section. Schoold the procure of the section of the section of the section of the section of the section. Schoold the procurest, therefore, which it may be consection of possible to remains all full out of four the section of a quarter, it must be of such a nature as to develop relief with a rapidity correcting fifty min on law by an assentior operation to the theory of the section of

With these facts in view, way little consideration is required to determine the impossibility of effecting the guidance or prophosion of the bulbox, to a pulse-final extent, by a force originating in the currier of human strangth. This indeed, is a conclosion which might have been arrived at without any such solution computation, by singly reasoning pour grounds observed from observation and superiorizes, and, indeed, the worder is that with as many and such polyalic testimates of the inadequery of the powers in question, any one should cert have one extended their employant, or contrively laises with to more emilicant tensus to accomplish of the cruestion. Every one who has ever been powered to the should be a bulbox, must have been struck with the display of human force which the occasion is adulated to soft later; the number of man employed in the operation, and the certains they are compiled to such, at times even when the ocite of the stamplers is a wright an otherwise would have forced about transmission of their strengths, an accomply could be autisative in the sight an otherwise would have forced direct transmission of their strengths, an accomply could be autisative in the against the contribution that the other bulbox of the strengths of their strengths of their strengths of their strengths on accomply and it is autisative in the high tops their force through the intervention of the body fired where strengths in the failures, and having to apply their force through the intervention of

But the includency of human strength to accomplish the guidance of the ballow is expalle of a still more accurate intermination. According to the deversation of Profuser Spiriti, Finzeron, and telescept has religion; investigant the subject, a man of the ordinary powers, weaking at a wheel, is composed to raise a weight of thirty pommals, through a page of these forts and a half in a second of time, reproducing the continue has extrained as a period of the hours a day. When the relevity, however, with which lie is expected in operate is intermed, the amount of necessions against which be no careful much be properfusively distintively and at the raise accretion among the producing this appeals, and then the accretion the producing this appeals, at the next accretion of currently and the producing this appeals, at the next accretion, of versioning the interior and printed of the makinger with take the would have no content.

By the substitution, however, of his logs instead of his arms, a higher degree of power might understudy be obtained, and which might be still fresher increased were her commondated with an has appeared as not his absolution as would enable him to add some amount of monother mention decreased to that accuraing from the sole contents of his holding visible. By this assess, at the ordinary rate of walking (which has been placed by the configuration of the configuration

The exercise of nuceduc strength, however, no matter how lightly it may be taxed, being limited in its charding, which the ordinates spee which it measured has been determined in founding upon the supposition of its uninterrupted continuance, it would be necessary to be precised with such an assent in reserve as would enfine to maintain the same quantity of power is contained expertise. Absolution, therefore, that a major cold entities to weather the state of the same state of the same state of the same and the same state of the

<sup>\*</sup> Neverty-three first in a occord (the rate required, being forestyness times genere than that contained in the proposition may wish our estimate in founded, the weight which could be roked will be but a non-undersectific part of that referred to in the same production. Tairty, divided by twenty-one, gives very nearly the quotient we have above dedress.

<sup>†</sup> A man may walk at the rate of four miles an hour, but I doubt if he could exercise his legs in the mode which would be required in turning a wheel, with the same freeden and at the same mis as if he had merely a pragressive motion to accomplish.

balloon in passing through the air at the rate of thirty-five miles an hour would be equal to nine thousand five hundred and twenty-right pounds, or about two thousand four hundred times the amount of that ascribed to each individual; consequently to effect its propulsion consistent with the obligations we have already considered to be essential to the accomplishment of any beneficial result would require a force of two thousand four hundred men, or about two hundred times as many as her whole ascensive power would be competent to support; and that, tomaking no allowance whatever for the weight of the machinery by which they would have to operate.

It is true, by the adoption of another form, a balloon requiring no more propulsive power than that we have made the subject of the preceding calculation, might be constructed capable of supporting four times the weight: even here, however, all that would be effected would be an increase to that extent in the efficiency of the cargo, which would still remain about fifty times as great as she would be able to support.

Nor is this a conclusion which could be avoided by reducing the size of the balloon, in the hopes of attaining a point in which the forces opposing and those opposed would be more on a par. On the contrary, the resistance varying as the squares while the buoyant power follows the ratio of the cubes of the diameter, any attempt to diminish the scale of the experiment but tends to magnify the disproportion between the difficulties and the means whereby they are to be encountered; as elliptical balloon of nine feet radius, equivalent only to a charge of two men (the smallest number consistent with what we have before stated to be necessary for the due continuance of the impression), developing at the rate in question a resistance of one thousand and twenty-four pounds, and consequently requiring an amount of human power at the value we have assigned to it, one hundred and twenty-five times as great as it is capable of raising. For the satisfaction of those who might expect a more favourable result, by enlarging the dimensions of the balloon, we have subjoined a calculation from which they will perceive that, in accordance with the obligations before laid down, the smallest number of men that could propel a balloon sufficient to support them would be about three millions three hundred and thirty-five thousand, and the smallest balloon that could carry men sufficient to proved her at the rate in question would be equivalent in its contents to a sphere of about three thousand two handred and sixty three feet in diameter.

In default of human strength, the mind naturally reverts to the great agent of modern invention, the wonderworking power of steam. Independently, however, of the inconvenience and danger necessarily attendant upon the employment of a rower resulting the aid of fire, there is one essential objection to steam which must for ever preclade the possibility of its adoption as an agent in the propulsion of the balloon; I mean the continual issu of script from the consumption of fuel and the conversion of water into vapour, which more or less must ever attend its employment. The force of this objection will at once appear, when we consider that it is by the preservation of the equilibrium between her contents of gas and ballast she maintains her position in the air. Whenever that equili-

resistance troop all bullows, partaking of the nature of a sphere, cone, cylinder, or ellipsis :- Symre the rolles of the largest section perpendicular to the horizontal axis of the machine, and nealtiply by 2-1416; this gives the number of square feet in a circular plane contralent to the mid wetten. Of this, two-thirds only are to be considered as forming the real amount of the resisting plane (the actual resistance being upon an average diminished one-third, on account of the particular from of the opposing surface; which upditisly by the sum answering to the rate of the wind in the table of atmospheric resistance, and the product will be the amount of direct renstance in pounds aroundsposs. Divide this sum by the number of pounds which, at the rate assigned to the agents of the peopulsion, shall be found equivalent to each man's muscular strength, and double the quotient will represent the number of men required to effectuate the snaw sussent of resistance at the same rate, oring one charge of new sufficient to perpetuate the operation. By this made of computation may be tested the ecoclusion we have serived at in the text. As the buoyant power of the belicon follows the ratio of the cubes, while the superficies, and consequently the resistance, varies as the squares of the diameters, it follows that may alteration in the size of the balloon sense affect the former more than the latter; if a balloon, therefore, is capable of carrying energy the quantity of human power equivalent to the registrative she develops, she must be the smallest that can be constructed with such a result; incomuch as any further reduction in her size would diminish her busyancy more than her resistance,

. The following is a general formula for calculating the direct , and she would then require more force to her propulsion than she would be able to carry. Now, considering a balloon of fifty feet in diameter, when properly infiated, to be sufficient to mise a weight equivalent to twelve men, by referring to the proportion between the cubes of their distactors, we shall find that one of three and two hundred and sixty-three fort, quoted in the text would be barely competent to a charge of 5.555,294 men. By throwing the guerous contents, however, into a more clongated form, it would be possible, as we before observed, to reduce the nce without affecting the busyancy. Such a vessel would be a cylinder, cupped with come, or an ellipsoid, whose treat was two thereman and fifty feet, and length equal to four those its diameter. The resistance occasioned by the direct impact of such a body in progress through the atmosphere at the rate of thirty-fire miles an hour would, accordingly (as will be seen by reference to the preceding formula), be equal to 15,357,169,554 pounds, and \$334.200, the number of men by which an equal amount of force could be peremated; each man's onetum being right normals, as above cosigned, and a double allowance of mon brong required to achait of the operation being carried on without interruption. The difference (amounting to pine hundred and fourteen) between the number of men equivalent to her resistance and that equivalent to her busyancy, as here displayed in favour of the latter, however less, would certainly not be more than enough to compensate for the weight and resistance of the machinery, the friction of the atmosphere, and other circumstances, more or less influential. which have not been included in the above calculation.

brium is disturbed by the abstraction of a part of either of these resources a secrifice of a proportionate amount of the other becomes absolutely necessary in order to restore it; a proceeding, it is scarcely necessary to remark, by which her whole efficiency must sooner or later become destroyed. This objection equally applies to all those powers which are obtained by means of chemical decomposition, the rapid generation of gases by explosion, combustion, or otherwise-the very efficiency of which is, in fact, only commensurate with the loss of weight by which they are accompanied; nor am I aware of any principle whatever applicable to the purposes in question, unless, indeed, it may be that of electro-magnetism, concerning which, how-ver, our information is yet too limited to allow us to speak more decidedly.

Possessed of these, the mechanical agents of the propolation, together with a power sufficient to invest them with motion at the rate and under the development of pressure before calculated, the aerial engineer must not conclude that the question of the guidance of the balloon has been completely solved, and that nothing remains to interfere with its immediate adoption as a mode of transport applicable to the ordinary purposes of life.

Independent of the difficulty that must ever attend the reduction to practice of rules involving the nicest points in rational and practical mechanics, the most rigorous economy of power, and an intimate knowledge of the strength of materials, with the bost method of employing these, there are certain restrictions regarding their application, failing compliance with which the best-devised schemes for the propulsion of the ballson must prove utterly inefficacious, or at least successful to so small an extent as to remain still as inapplicable as ever to the purposes for which they are required.

The first of these regards the form of the aerial vessel. It is scarcely necessary to observe, that before any scheme for its guidance be attempted, the balloon itself must be of such a form as will admit of its being guided. It must have a line of least resistance, and this line must be that in the direction in which it advances. This involves, likewise, the consideration of a radder, or some other corresponding apparatus, by means of which its propulsive energies may be directed into a determined channel. In short, it must have a beed and a tail, as well as a body, and be capable of assuming and maintaining a fixed position during its forced progress through the air. Such a form, for instance, would be that of an ellipsoid, as before observed, or a crimder terminated by cones, like that recently exhibited to the public by Count Lennox, under the name of the Aerial Ship, and of which representations are to be found in old prints of acrostation, illustrative of previous projects for the guidance of the balloon

In the second place, it must be so contrived that when subjected to the action of a strong current of air, the balloon shall not, in the change of position it will be inevitably forced to adopt, interfere with the action of the machinery by which it is impelled. In regard of this, as indeed of all the other rules, consideration must be had. not to the actual shape and position of the balloon, but to that which it will have assumed when acting under the influence of the opposing forces.

Thirdly, it follows from this, as a matter of course, that the same strength of materials which is found sufficient for an ordinary balloon would by no means suffice for one the nature of whose employment infers the exposure to excessive and nawonted opposition.\*

Fourthly, the whole must be so constructed as not to suffer from the shocks to which it will be unavoidably subjected whenever it comes into contact with the ground, owing to the impossibility of making the attachment to the earth with that degree of firmness and certainty which is necessary to easure the safety of the bulloon and place it under the immediate control of the aeronant. And this, it strikes me, is one of (if not actually) the most important of the practical restrictions in question, and, at the same time, the most difficult to be complied with consistently with the other essential features of the case. For what, after all, can be the merit of any machinery that is liable, nay, almost certain, to be rendered valueless whenever it may happen to be employed, except under such a favourable juncture of circumstances as is not to be counted upon in the practice of an art carried on under the auspices of proverbially the most fickle power in nature? And yet I must confess I do not see

. Of the necessity for this provision the French projectors seem fully anothe, when they advert to the peachility of forming the balloon itself of solid materials, and gravely look forward to the time when wood, copper, iron, and the other impredicate of terrestrial and marine architecture, shall be put in requisition to supply a more substantial vehicle for the occupation of the empty regions of the sky. Upon the practicability of such actentos, it the office of the nature somewhat in the nature of a since are

would be neeless to waste words: I should only like to know, when formed, how it is to be inflated, and when inflated how it is to be emptied; for it is not to be forgotten that before it can be inflated it must frut be emptied, while, at the same time, once it is filled. nothing can be abstracted from it without the introduction of an equivalent. This latter consideration would, I rather support, journ any means of availing this conclaims by any structure of nucleinery that shall be in accordance with the rules we have been found from the respect to the respect to the contract, and the lightness which aging to be impriming refrance-testic, are qualified so quality calculated to aggravate the effect of the opening forces, as incompatible with the requisitions of trength by which also they own by a consocially reinsier; as included, it is disturbed to conceive any structure or arrangement of machinery available to the purpose, that shall either be bound the reads of the viction to be appelled-also, or anticlorally reunique in varied entiring occursible direction than it whenever of the viction to be appelled-also, are affected typic may be available to the purpose, that shall either be bound the reads of the viction to be appelled-also, are affected typic may be available to the purpose, that shall either be bound the reads of the viction to be appelled-also. I are affected typic may be a supplied and the area of the viction to be appelled-also. I are affected to the reads of the viction to be appelled-also are affected typic may be a supplied as a supplied and the reads of the viction to be appelled-also are affected to read the viction to be applied and the reads of the viction to be applied and the reads of the viction to be applied and the reads of the viction to be applied and the reads of the viction to be applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction to the applied and the reads of the viction t

Fifthly, the agents of the proposition must be made to operate directly upon the body of the halloon intelf, and or, an in every schone hereicher projected, upon the ora which is stateded to it. If In the fullitures of this condition a great difficulty present itself in the different sature of the materials which will have to be employed in the constriction of the halloon and of it is machinery; the firstle quality of the out, he self mydelling seture of the other, and the certain danger to the former when united firmly to the latter under exposure to force such as may be extracted to accurage to the former when united firmly to the latter under exposure to force such as may be extracted to accurage the great of such as for the proposal of the proposal of

Sixthly, the construction of the machinery must be such that an injury to one part shall not necessarily

impede or prevent the action of the rest, or be attended with consequences involving the secondy of the balloon.

And lastly, though not least, the whole must be so contrived as to maintain its equilibrium under all the variations of force to which it will be inevitably subjected in its progress.

Those, here constitute the principal obligations which the nature of the proceeding has imposed upon the guidance of the bullow. From a considering of what has been discussed in the proceeding exciton, the ingenious reader with, no doubt, have observed that the main detailed to the accomplishment of the object in view one, first, the construction of surfaces of the proper deper of hightness, so its definited aims and recognitude incl. to enable the construction of surfaces of the proper notions; and thirtly, the arrangement of the whole machine in accordance with the principle hold down in the latter exciton.

A fourth obligation, however, of equal, if not superior, importance to any, yet remains to be commerced appear, manuely, the regulation of the motives spatis in one is somewer so to cause by their impact the resistance which has been assigned to their operation. The difficulty of complying with this requisition is one proceeding from the classic nature of the medium, whereby its equilibrium of desulty become zone could pitterly and an attack of randordium induced in the realizance acatignose to the artifices in question, to the manifort determination of the rentinence they are expected to create. This will be better understood when we consider that upon the regular passage of the artifaces in question at large perion of the adjuscent atmosphere is seep as well to the forest-free of the artifaces in question at large perion of the adjuscent atmosphere is seep as well as the forest-free of the artifaces in the artiface of the artifaces in the artiface of the artifaces in the size of the artiface in the rise and size of the sourcing places exemitally constrained, and there is no short that I top, before either of these conditions were fulfilled to the extent outgood in the oritime of their respective quantities, a considerable approximation to a venue would have been formed in the lowes of their respective quantities, a considerable approximation to a venue would have been formed in the lowes of their

. The disregard of this particular constitutes one of the most remarkable characteristics of all the serial projectors with whom I have ever communicated. Treating the balloon merely as a mannequis, to try on schemes of propulsion, they entirely neglect to consider the condition it will be placed in when it comes to be exposed to the leibnesse of the force it will have developed in its career. Hence the inefficacy and absurdity of most of their contrivances whetever any attempt has been made to reduce them to practice. One of the adjuncts to the original plan of Count Leurox's alr-ship was, I remember, a set of small wheels fastened beneath the car co rather the caroe, to the frame of which the metire agents were to he appended, in order to enable it to glide on the earth after the descent, and aroid the even-current of a tor enders interruption to its flight! Imagine a piece of machinery watty feet broad and one bundred and eighty long, bearing a charge of more than ten tons, and furnished with wings prejecting some forty first or more on either side, gliding over the country upon centure, under the influence of a wind moving at the rate of thirty or forty miles an hour, attached, for steadisces, to a vessel of still more preposterous

dimensions, floating overhead and exposing to the action of the wind an extent of surface conivalent to upwards of twenty thousand source feet! Indeed the speculative Frenchman seems to have entertained a steam regarder of the nature of the element with which he was about to contend, when, in welly to the apprention of a gentleman concerning the scenrity of his muchinery in the dracent, be observed that it would be easy to obviste all danger upon that scree by coming down under the ice of some building or high wall, by which he would at all times be sure of being properly sheltered from the wind !- an ingentous expedient, as Mr. Green shily observed, which might be considerably improved upon by the addition to his cargo of a resolutionale north-wall, mitted to all cases of exceptioner; apen the principle, an doubt, of the universal finger-post which the Irishman asguciously preposed to the celebrated African traveller, Coptain Clapperton, as a ready mesos of solving his doubts whenever he should happen to have the misfortune of losing his way in the

tworts:

† See Note C, by M, Mongo, at end of this paper, p. 234,

operations, requiring more or less time to fill up, in proportion to the extent of space it had effected. Now, should be a place in the place in question of the place in question be compelled to retirents their presencion within the sphere of. Individual returnance ever the atmosphere has had time to recover from its effects, and anywheck to their efficiency will be consistend which no no increase of not or dimension will be mabble three entirely to overcome.

Upon the whole review of the case, then, it must be avowed that the propulsion of the balloon to the extent we have imposed upon it is beset with difficulties of no ordinary description. It is true that these difficulties consist not so much in the quality as in the quantity of what is sought to be done-in the notice of the operation, as in the extent to which it is requisite that it should be accomplished. Hence the possibility of effecting in a minor degree that to which considerations of paramount importance have induced us to assign a more extended limit. Apart from other considerations, the question of the guidance of the balloon is a mere expression, conveying no definite idea and affording no certain grounds for investigation. As a more abstract fact, there is no doubt the balloon can be guided; it is only in reference to the particulars of the case that any question can arise upon the matter. When, therefore, any person says that he has discovered the means of guiding the balloon, his assertion literally amounts to nothing, unless, at the same time, it be coupled with a specification of the rate and conditions under which he is able to effect it. Should these be found to correspond with what has been stated in the preceding sections, then, and not otherwise, will the question of an aerial navigation, applicable to useful purposes, have been duly and satisfactorily determined. This, however, is a consummation which I fear there is but little prospect of our ever being able to attain. The deficiency of power and the limitation assigned by nature to the strength of materials form a barrier which all our offorts seem incapable of enabling us to surmount; and, indeed, when we consider the nature and amount of the forces required to the propulsion of the balloon, it becomes a matter of question whether the same exertions would not be sufficient to enable us to dispense with its services altogether, and transport ourselves through the air by the simple exercise of wings alone."

The reader must not be misled by those insidious analogies by which unreflecting persons are went to be guided in their sentiments upon matters of this description; nor conclude that, because a ship sails, a fish swims, or a bird flies, it is equally consistent with the laws of nature that a man should be able to direct his course through the atmosphere by the aid of a balloon. Ample reasons will be found in the circumstances of each to invalidate these analogies and disprove any dependence which might be conceived to exist between them. The ship commands her course over the bosom of the ocean, not from the simple fact alone of her possessing two elements endowed with different rates and inclinations of motion (for such a reason would exclude the steam-vessel from our argument, which secures her progress by the instrumentality of one alone), but also from the striking superiority in the density of that (the water) to which she resorts for her propulsion over that (the sir) in which so large a proportion of her mass is destined to move; t while, at the same time, the general condition of the former, as far as its progressive motion is concerned, is such as to require but a comparatively moderate share of power to enable her to contend with it. Of these, the latter is an advantage equally enjoyed by the finny inhabitants of the deep; and though it is true the former (namely, a difference of density in favour of the medium of propulsion) does not characterise their condition any more than it does that of the balloon, yet the want of it is more than compensated by the possession of a specific gravity, so nearly on a par with that of the element in which they move, that little or no accession of bulk is required to enable them to support themselves that does not likewise contribute to the enhancement of the strength by which they direct their motions. The example of the bird, it is true, appears at first sight to be more to the point: possessed as it is of a specific gravity scarcely more favourable to its support than our own; while, at the same time, the medium of its evolutions being the same as that of the balloon,

The resider may not prohaps be marse that the hold then of human flight has once in a critical reside here sensityll resultand, and that one individual, almost within the meany of man, has agency of view pales. One has the sense of the sense of garage of view pales. One has the sense of the sense of human for the longeralls, who in the year 1742, occording to a confession which be the master but in deep for one time shared to the longeralls. We not the year 1742, exceeding to a confession which the longest the causes around the view to large the longest three particles of the longest three which be the against of the Tellions, suither be had signified this instantion of proceeding. All first he appears to advance with individual to the longest contribution of the longest three which is the first processing the longest three particles are the contribution of the processing the longest three particles are the contribution of the processing three particles are the contribution of the processing three strengths.

by which he seems to have been deprived of the power of each thereing ish exciting; when, the wingercensing to art in the manner uncessary for his support, he make to the ground and was precipitated against once of the fluiding methlume belonging the the Parisian hundresses, which like the nuclear of the Post Royale on the side of the river opposite to that from which be due their his departures, whereby his lay was broke and other serious nightic indirect dupon his person.

<sup>†</sup> A reference to the operation of the motive agents will show that the very reverse of this is the relative condition of the medum of propulsion and that of opposition, in the case of the

the same impediments remain to be encountered by them both. The analogy, however, although certainly more specious than the preceding, is by no means more conclusive. For both these emergencies Nature has supplied a remedy; for the former, in the endowment of immense muscular strength; for the latter, in the actual smallness of their dimensions. Possessed of a power sufficient of itself to overcome the attraction of gravitation, the efficiency of the animal is ever dependent upon its bulk, and consequently at all times proportioned to the resistance it has to contend with; while from the positive smallness of its size, not only does the structure of its organs easily fall within the limits assigned by Nature to the strength of the appropriate materials \* (in consequence of which it is enabled to surmount a great portion of the forces arrayed against it, and at all events avoid incurring damage from the remainder), but likewise through the facility with which it can secure a retreat, it is enabled without prejudice to dispense with the possession of powers superior to what at times it may have occasion to encounter; confined to minute dimensions, the bird that is unable to match with the wind can at every turn find a refuge from its influence, and is consequently perfect with half the comparative amount of force which would be necessary to the success and security of the balloon. Thus, to sum up: a density in the opposing medium inferior to that of the medium of propulsion; a specific gravity but slightly removed from that of the element in which they move, together with comparatively trifling forces to contend with; and lastly, a size that arms them against injury and puts security at all times within their reach. These are advantages more or less enjoyed by all objects affecting fluid media which are denied by Nature to man in his endeavours to navigate the atmosphere, and completely destroy whatever analogy might be thought to exist between them

"But," it may be solved, "supposing as mails to accomplish all that has been stated to be mecosary to the prefet generators of the sky, why may not an earlist asyciption be made applicable to need purpose in a set degree? And why must we shashed all bayes of advantage from the practice of an art becase we are maske to iming it to a higher degree of perfections? "Simply becases, in thoughing the mot (special sections) and constant difficulties of the case,'s we scribe abugefur that condition by which the character of an art popularly to confident point in secondary distinguished, among the certain properly off ascense. It is not that other degree of the accomplished with less speci, how after, or to a few cited; but that in adopting our recoverable to accomplished with less speci, how after, or to a few cited; but that in adopting our recoverable to accomplished with less speci, how after, or to a few cited; but that in adopting our recoverable to a complished with less speci, how after, or to a few cited; but that in adopting our recoverable to a complished with the confidence of the confidenc

M. Marey Monge points out, in the four notes below, the chief errors of the preceding calculations, which, being in principle incorrect, make the whole erroneous.

Note  $\Lambda$  (p. 319), by M, Mogo,—Newton domonstrated the law "That the resistance of fluids was in proportion to their density." To speak, therefore, of the rate of motion of two fluids (water and air), without taking notice of their density, it to say mothing relative to the force necessary to resist them.

In fact, appendig 1 culie notice of no-water leaving the wheely of 16 kinderives as hour, and 1 cubic mixes of air having the whole of 40 kinderives as hour, and 1 cubic mixes of air having the whole of 40 kinderives hours, it has no seek face will be possible to set these two cubic mixes. Let 1 be the weight of a cubic mixes after that of a cubic mixes of mixes of mixes of mixes of mixes of the section of t

First it is not zero reduced with the same groupedins of succeeds strength in a holy with the same standard expansional network strength in a holy with the same standard expansional network between the same strength in some strength in the same of the region of the flight. Hence, man, thenging has any succeed in a certain stretch in in the same of the strength sharp in the same of the strength in the same strength in the sam

and because they are between in preportion to the density of the medicina, and therefore want the expensive degree of anomalous strength; for that is in many cases, and could in all be supplied by Nations without any influention of the realizing laws: it is becomes the properties of the properties of the properties of the properties the construction of their organs. The case, the conversely the deals the contribute on this in all lit this procession of wings; may we not conclude that, if the materials for their construction has altered; with inperfect? And, on man helps to sustened, where Nature has

declared her inability to prevail? See Note D, by M. Houge, at the end of this paper, gage 234 will be equally able to resist the highest winds as the other to resist the strungest waves. This conclusion is opposite to Mr. Monck Mason's. But let us further remark.—

tst. That the acrostat can always, in case of high winds, change its altitude, and can find a layer of air calm or more favorable. Mr. Monck Maous has best sight of this when he says, "a balloon might reach the antipolos are agricumstance might have occurred to favore the recovery of her contro."

20. A wind that moves 100 kilonitres as hour is a burriane that levels building; whilst in fact the encount has only to do will will shall that moves at an except part of 40 kilonitres as how. According to the above formula, we shall find that the rate of increment of a cells willer will be, for the six 1, x 40 = 40; and for water, 60; y 40 = 1244 erg; 11; 21; 275. Hours an assent with a section of early 214 times keep when the acction of an overa-steamer would not require more power to move against an atmospheric current of 40 kilonitres the hour than is required by a closure to overcome wave naming 16 kilonitres the hour than its regular than a closure to overcome wave naming 16 kilonitres the hour than its regular by a scheme to overcome wave naming 16 kilonitres the hour than 10 kilonitres than 10 ki

Ko B (b, 200), by M. Morpor-What, does, in the notive principle in a stoucer without sails? It was tack and store without the leigh of the wind. Let us recipitate in a first words the elementary principle of navigation, It is, that for averaging, inclining  $\delta c_{ij}$ —in a world, that the power of the below should be felt—row elementary consequences of the state of the stat



INTERNOT OF THE NACTUCE.

In sequince, the conserved structure of the shift, the embrya Natiliae gainst the power of rising from the bottom, and the requires conditions for sectioning (y) the challents of an eight gain in the observed challents. It statedes to its otherwise too heavy body a contrivence for according in its strangelens, as we accord in our by the skill of a blacker. But it should not specified to this tensor power, conditions with the power of developing and aposphing of a blacker. But it should not specified to the shift of the

It appears that the proportion of air-chambers to the dwelling-chamber of the Nauthus, while an altie contents is such that the surface of the content is a manageoing gravity as the surrounding radar. The spines, which traverses the airchambers, communicates with the periodicum, and in more probably filled with fluid from that coving. It certainly conducts small block-vanels, which are covential to the vitality of the chambered part of the shell—Own's Monite with Parth Nauthur. Note C(p, 330),  $(p, M, Mospe, -N_0)$ , it will pass through the centre of gravity of the else machine. This lip possible be found below the gasheloter, on account of the weight of the cent and in centents; and this portion of the centre of gravity below "the body of the ballons itself" will be very fevorable to the appear of an arise and to the million movement of the whole, because it will be put in modes from the centre of gravity.

No D (g, 322), by H. Moy.—We must not forget that there is no analogy between blick and aeroscale. Whilst the latter are supported by enclosed gas, the framer regains wings to assists as well as more thresholds, shigh, Besides, there are instatuces in which we must come to insinte Xutrus. We say restore to some that shorted quasiscale and enviloation, and refer now H shorts the simposility of award proposites. The area manipulates had difficulties as great in its yearsh; and, for from resonancing the loop of overcoming the obstacles to serial margination, but writter removable the assisted alongs. Taken improbes coming in trivial:

It is with the greator pleasure that we now come to the valuable 'Études sur Talcrestation', by Meas. Marry Mones, Published in 1847; and to his carreld calculations would I refer any one who desires a desper insight into this science. We have already given his corrections of Macch Mason's deservation; suffice it here to insert this ayropsis of the difficulties to be evercome, and an abstract of the book from the "rapport" made of it in 1843, to the "sciencide Educament pour Pludativit Nationale."

He approaches the sciences by saying aerostation is divided into two parts:-

1st. Acrostation as it now is, in the infancy of the art, may serve for scientific and military observations, for aerial voyages without direction, for public fetes, for lightningconductors and hail-preservers.

2nd. Aerostation, as it will be, which constitutes aeronautics, that is, aerostation taken in the largest acceptance of the word;—in the hypothesis of an aerial navigation, capable of rendering the same services as marine navigation.

The first is far yet from being a safe and certain means, notwithstanding the numerous experiments already made, and requires many improvements.

The second is hardly broughed in theory, and in practice has to be created.

M. Monge's synopsis of the difficulties to aerial navigation, showing what conditions must be fulfilled, and the researches it is necessary to make, is as follows:—

THE CONDITIONS TO PLANE	OBSERVATIONS	RESEASCRES TO MAKE.
Let Combition.  What the gas-holder is to contain.	We are decided on the nature of the gas, it is hydrogen,	Find a process of making it more cheeply than by sulphate of time or of ion. See if it enmed be obtained more quickly and ecosmically by the decomposition of water by some untried way.
2nd Cordilion.  Of the material used for constructing the gra-holder.		Ossider pasteleard, couponed of many sheets of paper carefully joined and marnished, so so to make it proof against the cocupe of the hydrogen.

THE CONDITIONS TO PULPIL,	Generatic us.	RESTAUCHES TO MAKE.
3rd Condition, Of the form of the gns-holder.	The directing and the management of a captive account demands a lengthereof form; with pressure from the interior; the construction of an account of large dimensions would nequire a cylindro-control surface.	Build a cylindro-central nevotat and find out the just proportion between the greater and the multir axis. Meantier propose that the greater axis abould be two or three times that of the smaller axis,—might it be four times?
4th Condition.  The arment must have some internal pressure, or that it should not be indexed by the restance of the air, when it shall need to be read throughout, or to read the wind when it shall be engine or at anchor.	This outdition is indispensible, and appears the one most discussed; it is primaps the sheal of avial natiogation. The pressure ought to be very little, less than 0-002° in large ar- mentate.	Try the cylindro-coniral aerostat provided with the two cond-uses that I have proposed. Find out the lows of the rotations of the sit by experiments made with a view to nerostation. Would not the resistance of the sit segment- ing the internal pressure (which explit to be very little-band the sensitat? or would it not limit its speed?
5th Condition	Of all surthels hitherto proposed near ar-	Try the addition of a Montgolff-re, the two
The account cought to assend and dewend nithout loss of gaz.	perfectly gard or sufficiently energy to be and perfectly gard or sufficiently energy for it will be necessary to use several situalizationally, viz. the addition of a Montgodiffer, the two en- dences, the guide-topy, mechanical means, serves, "enues is painting," and the meiation of the atmospheric temperature.	confirmers and the increasing agents, as the means of ascert and descent without loss of gas.
title Condition.  The nerostat englet to be provided with a motive power sufficient for It to progress, by means of its own locasetive powers.	We have shown that the adaption of stran- engines to large necessate is not impossible.	As soon as accessate of large dissensions are constructed, it will be necessary to try stema- engines and other applicates for nextre-power.
7th Condition. The acrostal ought to lave a labo.	It is probable that a moveable weight in the longer axis of the acceptat will custaff the use of the holm to a vertical oscillation similar to its use in ships.	Make trial of the proposed model, or any other.
8th Condition.  The acceptant must have nothing to fear from strong winds when it in engine or at anchor,	This condition is of vital importance to ac- relation. Everything tends to the ledief that this can be effected by sustaining-cords.	Make trial of the proposed model, or any other.
9th Cordition.  The accessts of large dimensions must be of a simple construction.	The adoption of a gra-holder with little flexibility necessitates the braiding of the aemostal without fidding in framework is not possible). The surface extended in a flatiened state would permit of its construction.	Try to build a cylindro-cenical accuses with its surface extended horizontally.
16th Condition.  The aerial navigation ought to offer advantages beyond those of the various means of locenosion hitherts used.  Examples of some of its applications.	The dangers will not be greaker than on the an, the speed will be that of the winel; all places will relye the wirestages of the prewest exports. Lading and unishing will be very expe. Its appliance to seisors, he sax, and to the half disperser (paragride), is a mbject full of interest.	Try the accounts.
11th Condition.  To indicate the order that aboutd be observed in fature experiments, and the ways and means of meeting the expenses.	Artestatic experiments made for the object of importing the science can only be under- taken by governments, or a security of sub- capitalists.	To construct a cylindro-conical accounts in particles and 10 metres in diameter, and 40 metres in length. Afterwards another 20 metres in diameter, and 30 metres in length, and

From what precedes, we may, I think, draw the following conclusions:-

1st. If the possibility of aerial navigation is not shown by experiment, neither is its impossibility demonstrated by mathematics. This impossibility, or rather the great difficulty, will come from the resistance of the air (see fourth condition), which, acting on the interior pressure, might burst the aerostat when it is propelled at a rapid rate.

2nd. Aerostation will not be useful nor important to mankind unless a material for the gas-holder, both impermeable to the gas, and unalterable to the resistance of the air, can be found, and large dimensions (such as 100 metres in diameter) be available.

3rd. An experiment on a large scale is necessary, and is worth more than figures, to decide this question in a satisfactory manner.

# The following are extracts from this work :--

It spears from the calculations we have just given, that to deny the possibility of serial averaginon, in both yet he low of bevents (the rotations of fluids in in propertien to tells density), also to deny steens-averagints on water. It is, therefore, to deny two facts equally demonstrated, which is doubly about. Aerial navigation is therefore a possibility demonstrated by calculation.

## Again:-

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From this we learn that before completing the science of "Acrid Nergiston," several million must be cyclosed. It is reliefued that this acricit is a beyond he means of private individuals and, as it is a speciate for markind, because it center on accity a new means of becausion, more powerful, more rapid, and at the same time once enconsical than any other, it is before that to be desired that one or everal (increments, or due to Comparison) with a large capital, should make experiments on a systematic plan, and not, so heretofore, to waste time and money in the experiment without a system.

It would be still better if an European Armonautic Sourty, composed of representations of all notions, were

The Society could vote an annual sum to be expended, and discuss the projects to be put in execution, giving thereby encouragement to those that advance the science with slow but sure steps.

## The following is the Report of this work:-

RAPPORT FAIT PAR M. ALCAN, AU NON BU CONITÉ BES ARTS MÉCARAÇUES, SUB UN OUVRAGE INTITULÉ ÉTUBIS-SUB L'Aurostation," Par M. Edmond Marky-Monge.

Minorieurs.

La fia da dernier skiele, de Househ en dekouwerten importanten, hen prohiekt anvene qui est antant de retentionment qui code dus sirentats. Arrail 1215, depune du experiences démantants des feires Marghéres, et dilutir pu la sorten suit rejuit al Ennant la piende de Vilere duss les sor, comme en réplant, un peu plus d'un siche que querrante, qu'ile marberes de sile; et qui air du la reference du Marghére, cutelles à Vileres, vilennes et l'est siche que marque de la region de la vilente par une de la vilen peut de la vilente de l

Tous les range de la société délicient la vicción a émitique de Montpière, et ce menti le cas de dire, a nome certiquies de faire as jou de mota, qu'elle fut vaniment portée aux nous. Cet accouf fait à une invention cet à signaler dans l'històrie des plus fécondes, que dédain et sidifférence à enregistrer. Ce trismplu, pout-tre muipue dans les anasles de la science, vicavagia exprendant par Montpière set la societa de se avientes. S'esta esta un instituente de plus de l'il. Il dat ministerat avoir s'en

servir." Les soixante-quatre années écenlées depuis ces paroles en ont démontré la vérité, poisque, aujenrd'hai encore, on est à se demander : "Que fant-il attendre de l'aérostation ? Cette magnifique découverte, une des plus géorieuxes de l'osprit humain, doit-elle rester stérile ? La navigation sériemes est elle mas chimères on mos ?"

Telles sont, en effet, les questions que a'est posées M. E. Marsy-Mosse, et qui out donné naissance an livre intéressant dont nous avons à vous rendre compte succinctement.

L'auteur a divisé son travail en trois parties: la première, comprenant les discrets conditions de le aurépation des promètes, la seconde, la contraction d'un bailen en entre; et la troisième, des autes complémentaires qui es rottachest aux deux remières.

M. Moy distingue data la savigation aériente: I l'arientation strotte, or frendance de l'act, qui on la incomo étite un micromet de clien an impériente, et dus l'Image en rémeita sux substantais accissifiques en militaires, aux voyages aéries sans direction, aux l'ises publiques, aux pentamerres, pargeites, etc.; l'Teóretation de sous, dant la thérie et à pieux l'authori, qui lime tent à faire que partique, etc.; l'Arientation de sous, dant la thérie et à pieux l'authori, qui lime tent à faire que partique, etc.; l'arientation affine service que la marine. Il ya pour les deux on, des consédirations principales et comments. À l'étable desquible l'attairer d'intri vaive cois. Le centente de l'arientat son enverèque, n'ément, les supviues de la diregue de la senvoire restaure de l'arientation apprendict l'Appeller que son en les autres respects, et qu'in un liaisont de l'arientation apprendict de l'emplé d'une que our les autres respects, et qu'in un liaisont production de l'arientation apprendict de l'emplé d'une que our les autres respects, et qu'in un liaisont production de l'arientation apprendict de l'emplé d'une que our les autres respects, et qu'in un liaisont partier de la calcular par une décomposition plus prompte de l'enc. La chânie no sounit histor lougteupes et et question partique sons activités.

L'excheppe des dévotats, qui, comme le fait remarquer l'auteur, dui être complétement impermétable, instâreble aux intempéries des misses, et d'une certaine téresaité, et une des parties laisant le plus de l'une critaire inseant, et une de parties laisant le plus des plus coestielles. En afront à carriège défecteme égitementaire, en éfic, à une harque qui au tendralit pas à l'eux et ceptuales aux mes mattére du tries régress d'éffe brotes le coditions papers à temme excelèppe. Aussi M. Mosp fait il remarquer que les premiers pas, en airentaire, men arrêtés par cotte difficulté que l'expérieux seuls pour transders.

En Acelenda l'Estela de la direction M. Mospo commento à faire partice de l'Affe trep ginéral-count silusies, qu'il ny se que faire disposition de l'ace qu'il no peu au de monte le verte. Se sergiuente aut loise et du caractère persissent fermis peu qu'ilper tentatives leuerces de direction, aux reus companies nicripations et des direction, ser le des caracters de mandages et les différences qu'éfects la nassignia nuelline et elle direction, centre au caracter de l'ace de l'a

On towarm, dans Is liven, do coloids tris-claim et the périch à co mjul. Saus altentite précidents qu'un arcitetat paires all'estre me vent quévoque, l'actuer passe qu'il child d'une face me finalisme il permit se dirigire contre un contrat légar, comme na lustem marche contre le cours d'une rivielle. Il ve plus iden : "Il n'et pas-banch, dicht, d'antiente la possible de vent de contrat le cours d'une rivielle et ma modets inflement plussais, qu'il ou direct qualité d'une partie de vent de course de c

réficehit que la question de la dépense aut accordaire dans la solution du problème; car cette dépense serait largement compensée par l'économie à faire sur la construction de la voie qui se trouve tout établie avec la même perfection autour de tous les noisse du globe.

Après avier fait comprendre tente la partie de seu mijet, l'anteur revivent cu détail aur les différentes parties seuthielles, télbre que la freue à plus caussailé à depère pour les quies de éventes destinés à la auvigation à tous ventes la prenie deviner qu'il se géaule que dépance; les principeux moyens unités pour aussir de dessule sous predie de get. Notre cultre ne nous prenetant pas de suivre les développements de tous ces prints, nous nous hornerous à richter quésiques under freuêtats comparties.

Comme la prossion infririeux d'un afentat doit être tris-faible pour ne pas déchier l'envelope, l'autori ciliconaire que la firme la plus curvenable à adopter est la surface dévelopable cylindro-cosique, qui peut se prêter à l'articu de compresseurs mass expose l'étofic à une require, propriété que si pas l'envelope à devide courbure, qui est, par conséquent, exposée à des plis mainhles, lereque la pression sur certains points varie, comme cela arrive frécuentment.

Si l'on parvenait à faire un tauge fréquent des aérostats à grandes dimensions, tout le monde comprend qu'on ne pourrait employer, pour monter et redescendre, des movens dont on se sert dans les ascensions qui n'out on'un but de curiosité, consistant dans une perte de gaz qu'on laisse échapper par la partie inférieure du ballon lorsqu'on veut monter, et par celle supérieure pour pouvoir descendre. Ces pertes, dans un grand ballou, et pour un trajet d'une longueur sensible, diminueraient bientôt sen action, et pourraient le mettre hors de service; aussi a-t-on proposé diverses dispositions pour éviteur ces ficheux dégacements du fluide. L'auteur, après les avoir massées en revue, remarque qu'ancune, en particulier, ne peut agir avec l'énergie de la perte de gaz, et qu'il faudrait, dans l'état actuel de l'art aérostatique, avoir recours à leur emploi simultané, qui, malheureusement, est loin d'avoir la simplicité désirable. Mais, su attendant les nombreuses modifications que réclame l'art de la navigation aérienne, dans l'acception la plus large du mot, M. Monge a'occupe des perfectionnements que nécessitent encore les nérostats destinés aux observations scientifiques; il recherche les moyens de construire des ballons captifs, de façon à pouvoir les Sever et les maintenir dans les airs au milieu de la tempête, ce que l'on n'a pu obtenir jusqu'ici. Il propose, en conséquence, une construction de ballons de forme allongée, et, pour qu'ils ne soient ni redressée verticalement ni abattus par un coup de vent, il combine un système d'amerre aussi simple en'ingénieux. En un certain point de la corde de l'assere qui maiutient le bullou dans une position horizontale, il fixe une poulie sur laquelle passe anssi une corde ou sonstendante, dont une des extrémités est fixée au dessous et à l'arrière du ballon, et l'autre à l'intérieur de la nacelle. L'action du veut, en agissant à l'arrière du ballon, opérera comme sur un cerf-volant et le fera remonter, L'inspection de la figure tracée dans les planches du livre suffit pour se rendre compte de cet effet. M. Transes, dans un travail remarquable, addressé à la Société philomathique, avait déjà proposé, dans le même but, l'accomplement du cerf-volant au ballon. Mais la première idée que le cerf-volant peurmit un jour être-destiné à un rôle moins futile que celui auquel il sert est due à Euler fils, qui publia, à ce sujet, de savantes recherches dans les Ménoires de l'Académie de Berlin de 1765.

L'application de la bellé bife de M. Acros eux les aérontais puntommerres et pumprétes dépendant d'une benne cervelappe et d'un mouvem de maintenir les ballons contre le veut, nous aivanes pu maner sons aibane les rechérches. à ce migri, cer la réalisation de ou paragréles arent, à élle seule, une compensation aux nombreux surrifices faits pour Défractation depuis l'apparation des nonatgodières.

Par la publication de la dualitme partie de son livre, M. Mony donne tene preuve rare de son anouer pour le progrès. Citte partie est consertée aux détails de construction à lus hallon en cuivre que l'acteur a dist faire, et qu'il recommande de se par renouveler à cause de son peu de succès. les métaux, sons une faible équiament présentant trop peu de résistance, et lour emplei catarianant à une grande dépense. On doit dons savoir gré à M. Mony de checher à évier à d'autre des coussis dans me direction pouvair estather à de nouberen faise en pur perts.

Edia la trisiènea partic de l'average contient des redurches et des notes historiques intrivensate, des formules sur l'abstitute, due Table directue coloniarie à l'afferentes, une riche sur l'occopitance des extrevolute aux hillour; des observations sur les poisson, les elevent, les inserica sulfe, dans ber rapport avec les aissistants, etc. On voir per l'auteur à la rieu singlig pour reades la publication aux compreties que possible; aussi pouve le considèrer comme su vidiable braile démandain sur l'adoptation, pouvent être commit aver foiri pur définires d'en rouve de défighlé circume le condition de nu lois en sur la réferent braile en la comme de la co

d'impossibilité absolne, leur solution ne doit plus être qu'une question de temps. Il nous est donc permis de conserver encore l'espoir que semblaient roufermer les paroles de Franklis, qui a dit, à l'apparition des montgolfières, "c'est l'enfant qui vient de naître." En effet, en voyant avec quelle activité, à notre époque caractérisée cependant par ses recherches positives, en recommence à s'occuper d'aérostation, de perfectionnements pratiques, on est porté à croire que le terme de cette enfance n'est pas très-éleigné, et que, si la rémaite complète de la navigation aérienne n'est pas réservée à notre temps, il pourrait lui être donné de la perfectionner suffisamment pour lui faire rendre bientit des services signalés; mais, comme le fait observer M. Mosge, le succès de tels projets ne peut être hité qu'aver le secours des gouvernements et d'une association de capitalistes. Remarquons, à notre tour, que des travaux aussi sérieux que les Études sur l'Aérastation no peuvent que contribuer à cet heureux concours. Ces études nous ont done paru aussi utiles qu'intéressantes, et dignes, tant par leur nature que par la manière dont elles sont présentées, dn nom illustre one porte l'autour.

Votre comité des arts mécaniques vots propose, en conséquence, de témoirner votre satisfaction à M. Mesor. en le remerciant de sa communication, et d'insérer le présent Rapport dans la Bulletin

Approuvé en séance, le 20 Juin, 1849.

(Signe) ALCAN, Rapportour.

We may sum up by saving, the weight of the air is the only base of acrostatic movement. and this weight is not far from being invariable. Mons, Nadar expresses this still more boldly in 1863 in the following formula:-

> "To contrad against the air, one must be specifically heavier than the air. All that is not absend is possible; All that is possible may be accomplished,"

He then goes on to say :-

That which for the last eighty years has prevented the possibility of directing the course of balloons, is the balloon itself; in other terms, it is sheer fully to endeavour to struggle against the air, when one is lighter than the air. To the pen, brior veste, if the physicist may use the words of the poet, it is all very well to adjust and adopt all the various systems, however ingenious they may be -riggings, paddles, wings, flux, wheels, rudders, oars, helms, sails, and countersails-but it will never be able to prevent the wind from sweeping away the whole concern.

A balloon which presents to the action of the atmosphere a volume of from 600 to 1200 cubic metres (22,00) to 42,000 cubic feet) of a gas from ten to fifteen times lighter than air, is by its very nature soutton with incapacity to struggle against the slightest current, no matter what may be the resisting motive force which may be imparted to it. Both by its constitution and by the medium which drives it hither and thither at the pleasure of the wind, it can never become a vessel; it is a boov, and remains a boov,

The simplest mathematical demonstration will irrefragably show, not merely the helples-ness of the balloon against the pressure of the wind, but that it is a positive nuisance, so far as regards aerial navigation. Given, on one hand, the actual weight which each cubic metre of gas is capable of lifting, together with the cubic contents of your billion, and on the other the miningum pressure which the wind must exercise, calculate the difference, and then draw your own conclusions.

In short, it is necessary to hear in mind that whatever be the form which you give to your acrostst - be it spherical, conical, cylindrical, or a plane surface—make of it if you please a bollet-shaped body or a fish-shaped however you may distribute the ascensional power in one, two, or four spheres-in a word, with whatseever equipment you may provide it-you will never succeed in making 1 = 20, let us say; and balloons will never be other than pade are to a baby's head.

The first thing which it is necessary to understand and to affirm is, that these partial successes, obtained in the absence of the adversary-in other words, during a dead calm, in an enclosed space-have proved nothing, since it is simply impossible they could prove anything.

Aerial locomotion must be proved sub sole, sob Jove, in the open air, and has nothing to do with fisher, nor chamber aeronants. Yet it is owing to their indefatigable perseverance in failure that we are indebted for the establishment of a theory henceforth certain, since it enganates from themselves directly and absolutely by a negative.

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We must, therefore, reverse the proposition itself and formulate thus the new axiom: "In order to contend against the air, we must be specifically heavier than the air."

Just as the bird is heavier than the air in which it moves, so man must obtain from the air itself his support. In order to command the air, instead of being at its mercy, he must support himself upon the air, and no longer serve as sumeer to the air.

In short, in serial locomotion, as in everything else, we can only rest upon that which resists.

The air itself amply furnishes us with this resistance—the same atmosphere which overturns walls, tears up by the root trees a century old, and enables the shire to traverse the most inspetieous current.

According to the common wave of things—for things have their common sense—according to physical bees, not less positive than noral laws, all the power of the air (supposed to be irrestablich yeterbuy, when we could not stand before it).—all this power cross-to exist before the deathle law of dynamics and the gravity of bodies, and by this law it will come into our possession.

This is not now, for in 1768 Pareton, the engineer, predicted for the even its future importance in serial because in. All we have to do its ogive practical application to recognized phenomena. And, however alarming may be the simple appearance of an innovation, in Prance expendity, it is our day to hold fost to it, since if the majorities of to-morrow are merely the ninerity of yestersky, the pandox of yestersky is also the truth of tomorrow.

The purpose of mainful also graphshic, and I here site a few instance of near who had larshy arrived at the same medicion as supply. I norwised, about to going eagle first wisi of X. Necco, and the heaving of Domanties, Writers, a simple theoretic inscreasticts, but of a free and ascarling, mind, who communicated name be obtained of this Writers, a simple theoretic inscreasticts, but of a free and ascarling, mind, who communicated name be obtained of this policies. It hadronics, inventor of a more lower poor per approach and is, N. N—, engineer, no of a bit or electronic departy, but arrived, by observation above and by simple begin, at the same solution. I also mention N, de Ponton A. Carlascouri, privates of the observation N is a lambelly two of effects for the last three years have been upon the practical domonatorists of this system, and to whose kindness we one the communication of a series of belloyates months, right by the surbown into the six of an exercise granulous whose the surface and converging exhausts where the surface and converging exhausts when the surface and converging exhausts where the surface and the s

If obstacles which I am ignorant of, personal difficulties, have hitherto prevented the idea from being carried into execution, the moment has now arrived for its realisation.

The first necessity, then, for acrial automotion, is to disemburrass once of of every kind of acrestat. That which acrostation refuses we must demand of dynamics and statics.

It is the screw which is to carry us through the air—it is the screw which penetrates the air as a gimlet does wood, the one carrying with it its motive power, the other its handle.

Every one has even the top called the spiralite. It comiss of four small that fina, or rather spirals of paper, edged with wire, and stathed at equal distances to a central point of light wood. It has pissified in increased as both of the state of the spiral point o

Let us now imagine spine of a material and an create sufficient to expect say matrix power valuever sean, ether, comprose of sir, or the libe—also this matrix power has be personance of fewer employed in collisies, industrial parenties, and it is plain that by regulating at will, as the deliver does the leconolity, you can size, decorably or remain motivates in space, according to the number of revolutions which you cause your server to make.

But there is nothing like the tentionary of the eyes. The dominaturation has been established in the most

conclusive manner by the various models of MM. Ponton d'Amécourt and de la Landelle—the one a man of the world, the other a man of leters—neither of whom are mechanics, and who have secured the services of two most skilled wecknen, MM. L. Joseph, of Arras, and J. Richard. These systems, different from the spinalifer, but more advanced than it, that they carry with them their

These systems, different from the spiralifer, but more advanced than it, that they carry with them their more power, testify abundantly, despite the dictus of Lalande, to the evident possibility of the ascent of bodies specifically beavery than the strosphere itself.

It is not necessary to dwell upon the inevitable imperfection, yet so encouraging, of these trial engines, con-

A.D. 1863.

structed under the worst conditions in every point of view, and which are purely in cubeys. Suppose them carried out to perfection, and, to de this, confide them to proper workshops and mechanic—let a committee of competent gentlemen direct the details—and if this were close, I think the most sceptical mind would cause to have any doubts as to the possibility of scrial automators.

I wish, as far as possible, to meet beforehand every objection, so corneatly do I desire that all should slare my our excrictions. I suppose, then, shoulting that after all, practice to often given the list to theory, some one will boldly maintain that, on a lerger scale—that is, on a scale commensurate with the proportions of the subject—the same results will not be obtained.

The answer is very. It is, on the outbray, the amplification of weight and form upon which we depend for someons and in fact for our principle in one submitted—for unabsorptoured, power X, representing, but may exceeding power, do not provide us with millionit associated power, we have only one thing to do—to doubte the power of our water. If this two-loss power his institution, we have four society one experience as we against its force, we distained problemy the weight of our water. And it is very certain that a tay-how provide as we against the force of the solid production of the contraction of the contraction of the contraction of the contraction of the power weight was the contraction of the power weight as we therefore our force of one how, while treight these mounts. We therefore distintate or local in properties

I think it may be admitted that the most difficult point has been passed, so soon as the screw provides us with vertical ascensional power, empile of being regulated at will.

The series will complete its work by providing us with a horizontal propeller, the rapidity of whose rotation, exceeding that of the lifting series, will be durther increased by that obtained by inclined planes; and we have thus the means of directing the machine.

Let us consider the action of the parachete. A parachete is a set of unlovelle, in which the handle is replaced at its point of invertible by an opening intended to one the excess of air, in order to avoid the strong oscillation, chiefly at the moment at which it is first expanded. Cords attractioning symmetrically from divers points of the counferrage, need concentrically at the hoaket in which is the accessant. After with is backet, and at the entrance of



M. Napan's Incas.

the folded paracinite, that is to say closed during the rise, a hoop of sufficient diameter is intended to facilitate, at the moment of the fall, the entrance of the air which, rushing in under the pressure, expands the folds more easily and rapidly.

Now the puredust, in which the weight of the ore of the statching code and the verigiling of the account are in equilibrium with the expansion – the puredust, which seems to have no test as in line to inductive the in falling—the puredust even, has been found equallo of being directed; and seconate who have posticed it, the current of the first. If the current is about on their the seconat over a place where the descent is disagrees my a river, a town, or a few-s-—the seconate precision in high left was approxed, piece of ground satisfied for his purpose, pulled at the code which internated being the day of the important garacter delinging to a for diffic glithe through the old; which it cleaves obliquely, to early the daired upon the content of the content of

The inclined planes disposed on the platform of our aerial locomotive, and combined with the ascensional power which it yields, will furnish to it, then, independently of the horizontal series, an assured means of locomotion.

It will be understed that it belong not to us to determine at present, in this poreal asterons, titler the mentionis or the money measurems. Nither ability we stupe it is even approximately the future velocity of writed becommiss. Let us rather attempt to calculate the putable velocity of a becomive gibling through the six, without the possiblity of remains of the  $m_i$  painted any oscillates, which the bost extends Let us fattery who becometive-constanting on its way, in the milds case of flow strategleric currents which truck at the rate of furly longwar not not, and delowing that current; all beyother these feminohide data, and your langulation will read in adding cell further to these gibby velocities that of a motific folling through as night of second from 12,000 to 15,000 fet it is a related on a making the tower of the gibbs in a surveine of fattainty long.

The following are extracts from a lecture before the Polytechnic Association, and offerens to the 'Constitutionnel,' in 1863, on the use of the Aerial Screw, by M. Babinet, 'de l'Institut de Franco':

1. The common theory of the guidance of hallows, preperly so called, in shortd. Her shall we make hallowed like the Picturely, for example, which, sowaring 129 for it a diameter, revist and numerous quainst attached currants? The sail of a vocal would require 40-shore power the expul terms with the wind. Suppose, which is impossible that a hallow could carry up with it a 40-shore power, the grant differ would absorpt write the grant differ would absorpt write to grant differ would absorpt write no graptos, for you can only see that maker this pressure your hallow would be extinguished in its full curvices.

This impossibility was admitted by every mass of common sense. M. Nadar has given himself a great deal of meeden tradule in order to demonstrate it. To finish, once for all, with the impossible gathener of hallows, stay posse all the horas of a regiment attached by a rope to the crudie of a balloon, you would only obtain for routh weing your balloon here.

It is quite otherwise that man should seek the means of raising himself, which means, at the same time, guiding himself in the air.

I bought one at a sys-dop-a phything which was then is foldon; called *topolony*; this by was compared of a small zero which, distrucible first five its superior by apply pulling a string wound round its quiling. The below was bowy cound, weighting abent a quest-or of a pound, and its finar wors of a wey thick timplate. This below did not below in longointy; its fight was so which in zone but it either block the children. Bere you see one of these phythings, as I found many of them in Pellipsian and Granar, and whose power of sevens in as great that I have seen thum gover the calculated, afterwards one of the many of the in Pellipsian and Granary, and whose power of sevens in as great that I have seen thum gover the calculated, afterwards one of the most elected moments of the globe. Too observe that the air materiach is exhaused, as well as the second in the phythic about the probability of the second in the phythic above the extra constraints.

MK. Nohr, the Trates of Nancieurt, and de la Lambelle, being swetching better before us than this, although the wings of their different models are quite realizantary, and really little worthy of people who wish to show some thing to those who are shartelighted. It is only yet the infinery of the process; but it is so far good, since it shows that the apparatus meants that the sir quite about. We have here, goatleners, gained the first step; for this result, small as it is, it industrated. The hills for scrow is not a novelty; hills were made before they were called as. Windmills are only ablive; the wind persons upon its wings and causes them to turn. In twibless, where you see ventering 1000 metres utilised by a mechanism no bigger than a last, the phenomena is the same, only the wind is replaced by water.

The aerial arew presents great difficulties; but if we succeed in raising by it a small weight, we are certain to be able to raise so much the more a baserier weight. The motion being in proportion to the capacity, it results that a large machine is always more efficacions than a small one. I repeat, your helio, which without exterior motion mixes a more, will curve an elebhant two times more easily.

These helicus, which seem at first to serve only for according and descending, resolve, moreover, the problem of its direction against a no-derate wind,

Maille, Garnerin once wagered to guide heredf with a parednet from the point of its fall to a place deternated and renote. By the combined inclinations which could be given to be pranched, the was seen, in fact, yet, distinctly, to manowers and tend towards the place designated, and her wager was goined almost within a few mats.

I have often watched, in the mountain, kirds which here, and I have distinctly remarked this procedure: when more they attain the maximum of accasion desides, they here and at the threatever hall with the eque way, in parashtus manner, upon the point which they have closes. Marshal Ney related to me that he has many times observed this manuerur performed by large kirds in the mountains of Algevia.

To sum up, it is positive that you have the means of transporting yourself, by the sole fact that you have in your possession the means of raising yourself. Reight abone gives you direction: after you have onbload obstained elevation, you have employed and inverted a opital of strength which you have only to expend as you please.

2. I lasten to reach that which was to me the favourite part of my article, namely, aerial locomotion.

This will by said by, be alone a serious article. All powerff I wide to prove one of the most important faces, While in the association by vow speaking with indivision, and share with indifference, of sirrial  $k^{(0)}$ can and with children's top, hourshed mechanically, were frying in terming at considerable heights, three ansaters, MN, Naler and do la Jandick, but well known to be public, and Mod Pattoni, Atamoure, were emissive with a sirrige proton for a arting and which is nicell them, weight and Mod Pattoni Atamoure, which derived their moiser power from a spring, and which resided them, weight an of spring without between ign nigrogation from without. The small engine are, therefore, perfect automates, and take their point of support on the six they traverse. The form of the into of the little remains the notable, as well as the nature of the states angine which is required to require the order of the six of the little remains to the relation, as well as the nature of the states angine where it is required to a specific order of the expective of the expectation of the expec

We can, then, guarantee merces to aerial navigation within the limits of the possible; that is to my, that we shall never be able to proceed against the vident winds, which oppose the flight of the next vignous hirds. As to the archivator of the areasta, which MN, Nadar and do is Land-ble bodly prescribe, it is long nince everyone versed in playies has declared the guidance of the balloons lighter than the air among the problems, not only insolube, but which is absorbed even to perform any

I have visibed used, the controlling captured in the captured out of takes in the wine; in the cap per set under. A replical would give a steely uncrease it the face, and the steem engine, mode of model, ought only to be employed in maintaining the spring of the same treate. If this will set as a place but to the matter lower. As to the required speed, in outer that the billing are at energicality upon the sir! I may say that in the experiments made along the first work of the captured of the same treate. I may say that in the experiment and a sing the first south and not replicate the same treate. I make a single speed of the same transfer of the same

Bajol movements have this advantage, that the six obliged to yield to the impulsion, has not time to examp, and that it is strongly compressed as upon the anterior flow of a casson-ball. It is for the same reason that a parashtic descends slowly; for in order to flow out by the borders, the air is compelled to make a considerable off-set, at the ortgoes of the body suspended to the parashtics. It is a tree glishing of the kird upon the inclined plane of its wings, which transforms the position of elevation into a rapide course in a borizontal direction. The small lateral resistance which the Aries often will be always and a smarrellously the horizontal progress, and the ascension will transform itself quite naturally into a progressive advance.

- I shall conclude in aying, with M. de la Landelle, that even laying aside all likes of travelling, we should be able (a my side I sale), in case of fire, minuthate, shipwave, to remove rever effection ansistance. Plany, "Densor jouwn searchers"—It is Gol-like to assist humanity. I generate the canonication of MM, Nadar, de Pouton d'Americant, and de la Landelle.
- 3. What now do we ask for? On what point is the insatiable genius of human progress about to direct its efforts? After my last article, you will divine that I wish to speak of aerial loomotion under the names of MM. Ponton of Americant, de la Landelle, and Nadar, Let us see what has been done, and what remains to be done.

Generally speaking, every question properly attack is more than half readvol, when it those not controlled any of the few grant place of natures—met have for exhausing physics, densiting, and physiology. Now surell anxiegation does not controlled any of these codes; if it therefore possible. 3Mt, Nadar, do has had readily and d'Amirouri, where understakes with much stir the solution of this question—over this constructs are machine which shall rules as man and enable him to support himself indefinitely in the six; in short, to contake him to surver from a certain point in the direction of early to be sourced. Now this, I mantain, can be done of a certainty.

It will be said to me, Why do you adopt with so much warmth the ideas and hopes of these gentlemen?

I regly, Becuse they have been for a long time my own. For some than fiften years I have provided scribt avergiated by mount of the sww. I have conferred about it with all our credetated mechanics, and if 30 Mz been a Mancourt and do is I sadedle had not reader, as they have done, automative apparatus which eavy their arrives power about the all is about londer apostly, as well as agent number of generations and automaphilosophers, entitled to chain the idea of the air travelling delicy, and more than that, I should be allee to produce all the infulfilles materiated calculations which guarantees the ences of this serial surprise. These calculations are snadegoes, not to say bletchink, to these which have been made for the window the value of the three machinest fermion feelback.

With the small models shown to the publicat a numerous meeting at M. Nakar's and by myself at a conference of the Polytechnic Association in the Amplicheter of the Selved of Medicine, before some thousand antilutes, this aquantum provided with springs wound up to a moderne pitch, was exe to raise and antain itself in the rid string, the whole time of the extent of the springs. Now, if a small strom appearants, one to managin, and notated to the motor-pring the transia which it lesse in putting the server into motion, the mechanism in question would have been indefinitely raised, notation, and directle, in the maked the atmosphere.

In a publication of the beliroperoidal trimwires, these gradients observe with just reason that a recolor prover observagine verigin incompactally so than the machine of one-lows. It is add in fertilization that the small place is a losd place; it is still more true to say in mechanics a small mode is a bul mote. The greater part of the deceptions which risk invastors arises from this, that they judge of the detect of a machine by that of a small model, which is what they call a  $c/c/c^2$  recover, not susceptible of working on a large scale. It is similar to the case of those who calculate the problem of an fall by the returns of a crop pathered frame how in their window-sill.

Whilst MM, Poston of Amécourt and do la Landelle were constructing their small automatives, M. Nodar, who, like many other, had also thought of the serve, but who had also gained experience of secretation and its fausificiency, was placed in relations with the two partisans of the serve. He catered with arbour into the triumvirate of which I have spoken, and because the effections promoter of the common idea.

Here, then, we have between these greatment and rayself the plan adapted to obtaine marial antegration with certainty by manned the server. A little model on an exact set will be constructed, at a moderal expense. A small high-pressure steam-engine will be constructed with a thin cylinder and light pints, and fits power will be applied to the motor-cover of the superant abordy constructed, and will will only this perign continually, restoring the force it have by the action on the dualthe securious lever. When we are in possession of an apparate which all rules intelled restoring only two pounds, we shall be able to collectate the expense of a machine capable of risings as ma or any weight whatever, and susceptible, with acrial propellers of directing finelly certain limits of p-scape in an assumption with all the little directions are considered with a substantial position of twicker with all the total continuated by a to violent wind. Let to observe that the area, when

blades of which are nearly norizonat, gives but small hold to the wind, which irrestibly carries with it the ordinary nerrotat. When a complete believabre of small power is obtained, it will be an aftir of many to construct so greater power, and the expose will be easily covered by an association which will find in public curiosity or otherwise an assured renumentation for the first order,

To these I annex a paper on aerial locomotion, by M. Barral, a French aeronaut, taken from the 'Presse Scientifique,' 1863:—

Everyboly known that I have travelled in belloom, hence it begines that very year I am receiving hundred of commissions on the gaintone of newtons. Most Repetury II reply to invented that I find their greater impracticable. They take the belloon almost just as it issued from the hands of the first serial traveller—a longtering mode, heavy is the loop they succeed, and they great as the review they returned a possible to a tensing modes, heavy is the loop they succeed, will by repeat on tyres the pytested as place, with the voggest, the moor insteaded to direct the medium. But they find to preview that this mealine will in vain develop the power they which, for it will work like a shed rigger, at the extrainty of reprecible in tunnamic nothing to the bulleton show, because they are not right; besides, this below he such dimension, that to control against the the widness the primitial and on the mind of the ship.

Most forquently, then, I see only in the invention of hallone guidance Lillipatians supposed by represented the middle, and precising, by absing the messeys, to change the place of the hook in the citigate to which the experience of the hook in the critical post which the experience and change the conditions of the contribution of the contribution of the contribution of the restribute. As I have the necessive that certificate the critical restribution of the contribution of the con

It was at the beginning of this month that M. Nadar publicly made known his ideas on acrial locomotion, at a meeting to which he had invited a goal number of anosa, engineers, writers, and gentlemen. I could not then be present, but here is what I roid in a kind of thepret sent to the journals:—

\*M. Noter presented to the assembly in oxylanation of the theory for serial anti-bosometica by the suppress in beforehand, and obviously, of every servotat, and by the employment instead, of the server and inclined planes. In recognising that this theory was not new, since, in 1708, fifteen years before the second of the first Montpoliter. Duston, the engineer, predicted for the server (in employment in serial suvigation, M. Nodar invoked the sympathetic occurrence of all to resultarize the lost, and to facilitate of the scribts (to previously application.)

"M. de la Landelle confirmed M. Nuba'n explanation in causing several models to work, constructed according to the system of M. de Ponton d'Amécourt, his fellowshourer. These helicopères mixed themselves automatically, carrying graduated wrights, and supershumdaulty demonstrated the certifiate of the theory."

We must not take M. Nadar quite according to the letter when he speaks of the desiste approxime of the billion; is do set on tremmon, evidently, all means for diminishing the specific weight of the apparate which he thinks he is able to make use of. In fact, he has taken for epigraph to an article which we published in the "Pross"; of the third August — In order to contend against the sit; if it reasoursy to be operatedly bewrite that he reason; but he had taken care to write in a note, "I know that some will like to follow upon the very letter of this formats, whose terms 1 have energented on purpose, and will fingt in relation, it with the to are indifferent."

31. Nodar's fundamental idea is: "to support osself on the sir, and no longer to give support to the sir?" in fact, if it the cose in the common ballow, where the securious I power is only the difference between the total weight of the servatat and a weight of stanopheric air equal to that of a column of air filling the space secupied by the servatat. To support ensenf or the sir, M. Nodar proposes the Mick, animated by a great speed, the same as

M. Potin, fifteen years ago, proposed inclined planes. M. Babinet has developed this idea in his article in the 'Constitutionned,' of the 15th August. I desire and ought to allow the learned natural philosopher to speak for himself.

M. Babinet is completely of my opinion on the impossibility of directing the balloon, with which we all, who have dared to make the experiment, were raised in the air, contenting convelves to ascend, and allowing cornelves to be carried by the strate of air where our ascendant power had conducted us.

It ought to be said that the galaxies the sever can ingress, in order to meant in order or such a friccious, is perfectly dominanted by N. Rabinet. The faith staff fise is in to take a machine which may serve for campile. Should we so,  $\ln$  find, enheavour to instate the conditions of the body, on a cunious agricultural indicated on the 20th angust to the trust Society of springes, noted as seven of bodies in equilibrium in the air? In order to proceed with sorters a complete to be specified variety convents it splits, are definitely not springer to the specified variety convents it splits, are definitely not open tass of matching the theory and the warm size of the live distribution in the safer. But the severe will observe and alliest the weight split; it is in consulted feature, and which N. Naday wides to realize with an explication of wording or consulted feature, and which N. Naday wides to realize with an order workey of every consequent.

It is only in trying experiments that we shall succeed in read-ring the problem hald down by M. Nahar. The young child has make fromble to arrive at being able to stand upon his logy; the grown num to longer remembers the studies of equilibrium to which he very often sucumbed during his early months. Let us come, then, to the aid of willing investors, who are suntine with a passion for serial becomes down. We appeal their next experiments,

There will, indeed, be much kloor in order that these ideas may materialize themselves. Before becoming the standard, while cross some ain law where the first leg of wond floating on the water demanded of the grain of man insures inventive offers. The sevents is little more than a full cause gained by arrages. But the man of the indetected custry has explicted experience energit to surround the obstacles with a milk major and which are nothing compared with all those which be has alreely fright paided over. I floorer, then, to those who are making every few event low avoiders of the relation in the contract of the



M. DE LA LANDENAN'S INCAN

"When we, decorpy, on think we resourd, any fact in the decord of nature when we, take flagon to malive has one preference has enemetyle, left of taking left stated and encoded. No their is alterigence has enemetyle, and except that which looks, at their sourt, the team height and in our trivial, has turn out preference and not their takes.

Ther, 82' Fahr,

The ideas of Nadar and the aeromotive party, so boldly expressed, have drawn forth the energies of those who foresee the practicability of guiding aerostats; and among the many pamphlets that have recently appeared in Paris, one published in 1864, by M. David, a Member of the Aerostatic and Meteorological Society, seems to be the best. It is the result of ten years' study. It bears the title of 'Solution du Problème de la Navigation dans l'Air,' and in it he makes the following remarks:-

Two objections to this new science have been made that have some weight and are worthy of the trouble of refutation, so I will here answer them.

The 1st objection is, to suppose that the accousional power of the accostat can only be argmented by greatly extending the surface, and that the resistance of the air against this surface would always paralyse the efforts to move. It is said, a locomotive attached to a balloon is movement associated with immobility. It is like a steam-engine attached to a cathedral to cause a change of locality, &c.

Those who reason in this way have doubtless never seen an inflated balloon moved from one place to another by a rope. One man can do this, unless the wind should be high. Neither have they noticed the rapidity with which a balloon rises: for, if the resistance of the sir was considerable, it would require predigious force to give it this motion; whilst in reality the ascending power is derived from deducting some forty or sixty pounds from the aerostat.\* This shows less becometive power than what a man possesses in his own body. Now, the resistance of

Moseus, Glassers and Countil, Webschampton, Aug. 18th, \* INSTANCES OF REMARKABLE RAPIDITY IN ASCISSIONS. tsez.-Started at 1 hr. 2 min. 38 s PR GAY LI SOAG, Sept. 15th, 1804.-0'40 A.M.; Bar. 30'66 inches.

ssiontes.

```
I hour 13 minutes ascending 23,049 feet above the sea.
                          or 22,912 foot above Puris
At 11.3 A.m. he was 42 miles obove the sea.
```

MESON GRAHAM AND BEAUTOF, June 17th, 1821.-6.5 r.m.; Bur. 29'80 inches, Ther. 66" Fahr. Below,

At 6, 8 Bur, was 27:40 or 2,257 Ther, 462 . 6.12 25:50 . 4,235 450 23- 8 ... 6,615 - 6.20 21-60 .. heard report of a case of

19-90 11 711 992 The highest point nearly 2 miles in 32 minutes. MINORS. GREEN AND RUSE, Founded, Sept. 10th, 1828 .- At 6.20 p.m.

the bolloon toos released with 112 lbs, ascending power, and in 7 minutes they had proved an altitude of 2 miles; the greatest height reached was 5 miles 746 feet; and they descended al Lowes, in Sumez, at

Dg. ZERR OF ALTOKA, AND MR. CORWELL of Homlows. Nov. 4th. 1849. - Time of starting, 3 r.m. 3. 5 P.M. .. .. .. 3,348 fort above the sea

3.10 . .. 3.628 . over the Elle. 3.15 . .. .. .. 3,911 4.094 8.25 4.923 3.30 4.433 Or at the rate of a mile in 30 minutes

MINUTE. GREEN AND WILSE, Aug. 17th, 1852.—Sharted, 5.49 p.m. reached 19,510 feet at 4,46 r.m. MESSES, GREEN AND WELSE, Nov. 10th, 1832,-Started, 2:21 p.w.:

reached 22,930 feet at 3.16 r.m. MINORE. GLASSIES AND CORWELL, Wobserhampton, July 17th, 1802.

```
-Time of starting, 9.43 a.m.
   At 9.49 a.m. .. .. 4,467 feet above sen-level.
     _ 9.55 _ .. .. A809
     . 10. 2 ...
                   .. .. 11,792
     . 10.15 . .. .. 16.912
     ... 10.30 .. .. .. 19,415
     , 10.50 .. .. .. 21,039
     -11. 7
                        ... 23,077
           Or nearly 5 miles in I hear 24 minutes.
```

```
At 1. 5 p.m. .. .. 1,130 feet above was level.
, 1.10 , .. .. ..
                      4,178
```

1.34 . . . . . . 11,202 . 1.30 . Or nearly 2 miles in 18 minutes. Meuric Grabourt and Cornett, Walredonaton Sept 5th 1865 ...

The highest second on record; height attained, 7 miles. Left the earth at 1 ler, 3 min. 20 s. p.m. Al L S.F.M. .. .. Ltso feet above son-level. - L13 - .. .. .. 5/53 . L:22 .. .. .. 10,770

L38.25 s. . . . . . . 1.33 r.m. .. 29,010 Or 6 miles in 47 minutes. The last mile Mr fill-labor was learnable but additional derivation struments and Mr. Council's observation of an exercit standing

at 7 suckes, proves that a height of 37,000 feet was attained. MINNEL GLADURE AND CORNELL Created Poloce, March 21st. 1863.-Left earth at 4.16 r.m.

At 4.18 p.m. .. .. 1,515 feet above sea-level. . 4.25 . . . . . 5,296 . 4.33 . .. .. .. 10,047 . 6.65 3,15 . 5.26 . Or 24,000 feet in I hour 12 miactes.

Masses, Glaresta and Conwall, April 18th, 1863.—Beached the altitude of 24,000 feet in I hour and 13 minut It is much to be regretted that the rapidity of many other as

has not been chronicled; autil these facts were obtained from Mr Coxwell, the author was under the impression, with offers of the party who shared the Wischester Experiment, that they had the felicity of moving at the rate of 3 miles a minute, as stated in the letter in the "Times" (see page 243 of this book). Such is the reliance that can be placed in one's own senses on nevel situations

INTERCES OF RESIDENCE RAPITORY IN DOCUMENTS. Two authentic instances will suffice; the one when Mr. Coxwell told Mr. Glaisber, "We great sure the land," when immediately over Bearly Head. They descended 2 miles in 4 minutes, and alighted on that promotiory. On another occasion, when the accent was from Welverhampton, they descended 3 miles in 9

the supposed fixture to move. The increase of surface doubtless augments the resistance; but the air is so disphanous, being 900 times less dense than water, that the increase is really insignificant. An accrustat has no friction, and the cylindro-conical is the best form for movement.

The 2nd objection is, the effect of the wind on the surface of the balloon. For all that one may do, it has been said the wind will always carry with it so large a surface, and any locomotive must be useless.

This objection is serious. I have weighed it in my mind a long time, and I solve it in this manner:-

A free balloon is a slave to the winds, following their slightest caprices. But I ask the cause.

Is it the strength of the wind that gives it this power? No; for the least wind will move the talloon as well as the strongest. Its movement is then indeed less rapid, but it is because the wind itself moves less rapidly.

Is it on account of the extent of the ballsou's surface? We may again say, No; for the smaller ballcon is influenced equally by the wind. The reason, then, for the dominion of the wind over the ballcon is the absence of all resistance.

all resistance.

The particles of air that surround the balloon do not change their place; it is, therefore, as much enclosed as
is the passenger in the railway-carriage.

The wind is the auxiliary of the sailing-ship; wherefore this difference? Because the ship finds in the water resistance sufficient in some degree to neutralise the wind, and can therefore tack at will.

What, then, does a halloon require, that it may be guided like a ship? Only to create a resistance that is wanting to annihilate the force of the wind, and give it a counterbalancing power.

Within these limits we find the difficulties considerably lessented. To cause it to disappear entirely there remains now only the demonstration of the practicability of creating the resistance that will counterbalance the strength of the wind.

Many methods can produce this result. I shall notice one.

The error, by its simplicity, extruses facility of action, and its characteristic of acting when entirely schemeral in a final constitutes searoufly the bost propulars acquit that areal actingiation can have use d, who to resist the effect of the wind and to come movement in a calm stromphere. Let us represe two creex, of very large disassions, placed on the right and let of the secondar two exact highly here of an echapsel form, with page disassions, placed on the right and let of the secondar two exact high here of an echapsel form, with part is section, and a measurably those the secondar to the right of rich according to the direction of reastion the review. This fact here considerable the west in effecting the object proposed now consecut ared discussion.

To resist by their aid the influence of the wind it will suffice to put them in motion either one way or the other, so that they might always work their way through the air in the direction from whonce the wind does come. They cannot then possibly fail to furnish the resistance required.

There is yet a final question to examine. In what proportion will this resistance be created? Will it be sufficient to neutralise the force of the wind? With the materials that scried warfuction can actually make use of at the present time, we can answer, Yes;

but industry in our deriving new serves, combining controls lightness with great strength; and it will be shown that a halloon of the necessary dimensions for effecting a truly serial voyage, furnished with these agencies, can oully create a force equal to and even superior to the wind. Be it understood that I am not here speaking of a burrieane or tormelo, but of the ordinary atmorrheric

current. In such a difficulty, what is lost to be done is either to reach the higher and claimer regions of the strategleme, or to dones to the cut first deather. I have here cled by performers the method for obtaining reminence, because it is the analote one in which to show dearly that the action of the wind on a halloon on the victorizationy converge, but if also appropriate it is should be the encluder sense of times researcated. In a following overface (wherein policy large policy of the contraction of the wind (a) is also propose a constitution of the contraction of the

## "Apparesl"

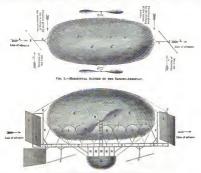
Before describing the combination of means by which I propose to obtain movement and guidance in the air I ought to observe that in aerial, like marine, navigation, two distinct methods of propulsion exist, viz., the

propulsion by sails, with the wind as a motive power, and the propulsion by a mechanical agent, such as the screw, for instance, making the specific gravity of the air its point d'arren.

I will speak first of the propulsion by sails, and then of the means purely mechanical.

### PROPULSION BY SAILS.

I derive the accessional power from a Intestring gas-holder, varnished or valcanised, of clongsted form, alightly arched in its upper surface, and terminating at either end in a hemisphere (Figs. 1 and 2, a.a.). I say.



For, 2.-Ventucal Section of a Sailing-Armouran (THE SUGER).

Intestring, from its being the best tissue for the purpose hitherto invented; but there is reason to believe that metallic gas-holders will one day be constructed.

Inside the accrease, attached to the lower half I place a halloon of much smaller dimensions, whereby accent and decreat on the effected without loss of either gas or hallant. It is connected with a receiver of compact gas, placed under the car; and by mechanical means this halloon can either be filled with gas or atmospheric air, according to the with to accred or elevent (Fig. 2, and are the second for the care of the ca

Netting overs the gas-holder (Figs. 1 and 2, AA). At the lower extremities of this net, and under the gasholder, is suspended a horizontal wooden framework, which serves to support the screws and the sails of which syare going to spack (Figs. 1 and 2, eccees).

To the right and left of the gas-holder are double-armed screws, which I shall call the lateral screws, from their position. Their length should be about equal to the gas-holder's diameter, and are so fixed that their axis 2 x 2

should be at right angles with the length of the gas-holder. They receive their motion from an engine, that may be worked either by steam or expanded air, and is to be placed in the car (Figs. 1 and 2,  $\nu$  n).

At the prow and stern of the gas-holder are two inclined planes of stretched canvass, mounted on a pivot, expable of turning to the right or left; these I call the vertical sails, Figs. 1 and 2,  $\kappa$  z.

Under the gas-holder before and behind the car are two inclined planes, fixed also on pivots, but only setting horizontally; these I call the horizontal sails, Fig. 2,  $\tau$  r.

Finally, under all, is the car for the possengers provisions, and the engines for working the screws, Fig. 2, e. a., This car is attached to the framework before mentioned by several registral of wood or iron, Fig. 2, n. n. and also to the netting that covers the gas-holder, to prevent all oscillations, and to consolidate all parts of the servants.

## THE NAVIGATION OF A SAILING-ARROSTAT.

The object of the lateral screws,  $\nu$   $\nu$ , is to oppose the currents of the atmosphere with an equal force. They correctly turn  $\nu$  as to serve up against the wind. Their movement should be more or loss rapid, according to the force of the wind, and should be as adjusted as to cause equilibrium.

This result delined, the servant is in exactly the some justifies as a salling-slop; and what cause the latter healmen is, the decoupling of the first of the wind by toxing. The sallange is property for it will sufficient to indicate the vortical salls,  $x, x_0$  that they present to the "wind's eps" the nest obvained better externalities. (See Fig. 1, the situation of the salls in riskins to the wind, represented by the arrange,  $\lambda j$ ). The fives of the See Fig. 1, the situation of the salls in relation to the wind, represented by the arrange,  $\lambda j$ ). The fives of the sall salls are in the direction of the arrange  $\lambda j$  that is to any genera the current. From this way so that the following reason of the end pair dipone. Without the arrange sails and all would be the after of the wind; with them the account notice, the enemy is transferred time a freederest ally, and the practicality of salls is broedered when the sall of the salls are in the sall of the direction by giving the an different inclinations. (See one subsciented also here it would be possible to turn completely result. I should, however, preport data bein be as the off (citiga 2, 1) taking on the ten we are directed in the six at our the sall of the sa

I will now speak of the uses of the horizontal sails. They can cause (but only during the movement of the nervetat) ascent or descent, without loss of gas or ballast.

The inclination of these sails is sufficient to do this, and they become, as it were inclined planes; and the nerostat, obedient to the slightest impulse, must rise or fall by gentle gradation.

The internal balloon is necessary to cause a vertical ascent and descent when required.

The simultaneous employment of these two assistants might on some consistants of use. The horizontal sail will, when experience has been acquired, diminish the fluctuations caused by the temperature and electricity (as yet so little understood), and will, therefore, make the line of march as horizontal as it can be.

On account of the simplicity of the means of propulsion, I cannot but foresce that the pace will be allow in ealm weather.

The sailing acrostat seems, therefore, in the future navigation only to hold the place of sailing-ships, being and of great size, and carrying goods, whereoff the delay in transportation is a secondary consideration. When, however, speed in desired, uncolanical propulsion, such as I will now describe, must be resorted to.

#### MECHANICAL PROPULSION.

The mechanically propelled account is, in the main, constructed the same as the miling-account. These are preserved intact:

> The gas-holder (Figs. 3 and 4,  $\Lambda$  a). The interior billoon (Figs. 4,  $\nu$  a). The retting that covers the gas-holder (Figs. 3 and 4,  $\Lambda$  a). The fixed framework (Figs. 3 and 4,  $\nu$  cocc). The lateral screws (Figs. 3 and 4,  $\nu$  n).

Besides these the new apparatus contains the following additions:-

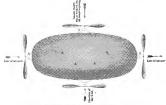
rudder, L

At the prow and stern of the gas-holder, instead of the vertical min of the suiling-assentiat, there are two screwpopulers (Fig. 3 and 4, 0, 0) similar in every point to the lateral screws, receiving their movement, like these, from the engine in the ear. I would show perticular attention to the large discussion of these screws; on account of the extreme mobility of the sir, and the feeblosess of the point d'appoi that it presents, necessitates size to obtain efficiency.

Those servers are fixed as that their axis is parallel to the length of the accessar; they are therefore at right angles with the lateral servers. On either side of the ear are vertical sails (Fig. 4, EE), as well as the horizontal sails, r; and at the stern

THE NAVIGATION OF A MECHANICALLY PROPERTED ASSOCIAT.

In this system of acrow-propellers, o o, their object, as the name indicates, is to cause the movement of the acrostat. Being put in motion by the engine in the car, they work their way through the air; the one drawing, and



FEG. 3.—BORLEONTAL SECTION OF AN ARROSTAT MECHANICALLY PROPELLED.

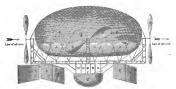


Fig. 4,-Vertical Section of an According Mechanically Properties

the other pushing the account. [I must here remark that I anticipate less result from the acrew-propeller at the bow, than I do from the one at the stern, on account of the current of air that this screw will throw on the gus-holder. If experience shows its inconvenience, it must be done away with.]

Such remarkable successes as those obtained by the experiments I speak of at the commencement of this book, with such small models that the motive power was scarcely anything, can have no doubts as to the wonderful results which will accrue to future aeronauties from the serew-propeller. Being adapted to an aerostat sufficiently large to carry the requisite engines, it will devour space without effort, and leave behind, as far as rapidity is concerned, all means of locomotion hitherto known,

It is the extraordinary power of the serew that forms the basis of this system, and will awign to it the first rank among the appliances hitherto contrived.

Other aids are made use of in the following ways. The radder acts as in a ship :- The horizontal sails, though not in the same position as in the sailing acrostat, will equally cause secont or descent without loss of gas or ballast. The lateral screws, as before, resist the power of the wind. The vertical sails are now invested with the same

I indicate these two methods of arriving at the same result, as both appear to have advantages. If, in reality, the former is most energetic, the latter is the more simple: experience alone can decide.

The principle by which the vertical sails are invested with this new attribute is the same as that by which the horizontal sails cause ascent and descent; it is that of the inclined plane. It is therefore only when the aerostat advances by means of the screw-propeller that they can become effective; the more rapid the motion, the more power they possess. It may here be as well to remark, that to resist the wind there is not required such opposing force as in generally supposed.

This, to be well understood, must be explained. There is in mechanics a well-known elementary principle that may be thus expressed:

When a body is subject to two forces that would drive it in different directions, forming between them an angle more or less open, it follows wither the one nor the other, but takes an intermediate course. If the ferces are equal, the intermediate direction is just midway. If unequal, it inclines to the line of the stronger force,

Let us apply this to the case leftere us. The body in question is the balloon; the two forces are, on the one side the wind, and on the other the screw-propellers.



DIAGRAM SHOWING THE CHENTERSALANCING FORCE AND THE LINE OF MARCH TAXES BY AN ARMSTAT IS THE AUG.

Let us suppose (see Fig. 5) a balloon represented by the point a, the wind blows from a to z, and the screw-propellers exercise their motive power from a to c. The acrostat is then under two impulses. If the force of the wind and that of the sevew-propellers are equal, the accostat will evidently have its line of msrch from a to p, subdividing the angle

in equal balves. If the force of the screws is the greater, its line will be from

We may see, by this axample, that in resisting the wind the screw-propellers will do half the buttle. The lateral screws will not, therefore, he required to oppose the wind with an equal force, but merely to make up the difference.

One may fancy, perhaps, that I am glossing over the difficulties, and am appealing to the imagination for the facts that demonstrate the superior force of the screw over that of the wind. But I desire to impress the fact that the foregoing reasoning is not bared on abstract theory, but on experiments made out-of-doors, with small

models, before the public. Notwithstanding the smallness of these models I obtained conclusive results. What, therefore, may we not anticipate for larger nerostats, as sine increases the power of the machine so much

more rapidly than the resistance of the air increases from extension of surface. If it should be still maintained that the weak point of this system will be found from the feebleness of the point d'appoir that can be obtained from the air, I will point to windmills. Their sails put in motion large grinders and coarse machinery. Great power is required for this; whence is this derived? From the wind that propel them in striling on their insulies arrived. Now if the wind (), on it makes jun powhere the result in section on the min of the windowly wheels not the min, put in mation by an engine with the same power as the wind, make them into seven, by striling on the wind \*? It is not therefore reduct that, if the power that moves the serves surpasses that of the wind, the result of the habour afficient by the serves will also be sequire to the force of the wind?

### THE IMMENSE RESOURCES OF LARGE ACCOUNTAINS, AND THESE INFLUENCE ON PUTURE ACRONAUTION.

There readers who have had hat little acquaintance with the abstract science, will doubtless be led to trait as an illusion the importance given in this work to large over small accounts; for it will occur to them that if they have more accensional power, and can carry larger engine, the resistance they will next with will be increased; that all the conditions will remain the same, and greater report will saw, therefore, be obtained.

This reacting, logical in appearance, has in reality no foundation, as it rests in error. I will demonstrate this error, and establish at the same time the truth of my assertions on the magnificent resources that will accrue to accountation from the use of large accesstate.

All know the ascensional power is ewing to the volume of the gas, and, again, the resistance to be overcome is the surface presented to the air.

That agreed upon, let us see if the conditions remain the same for the large as for the small acrostats.

That this should be the case, it would clearly be necessary that the proportion between the volume and the surface should increase proportionately.

Now, geometry shows us that volumes are composed of cutes, and acquire, therefore, when their dimensions are augmented, a growth far superior to the increase of their surfaces, which comprises only the squares.

In applying this to the question in hand we arrive necessarily at this conclusion, that the increase of the acceniousl power is at a much larger ratio than the increase of resistance from the extension of surface, and this difference becomes more apparent with the increase of size.

The conditions are therefore very far from remaining the same. But in such things nothing is more eloquent than figures; with these, therefore, I will end this demonstration.

Suppose four cylindrical acrostats, and numbered as follows, with subsequent dimensions ;---

Let us see what will be the respective dimensions of the volumes and the superfects. On secount of this convex form they offer less resistance to the wind than that of the plane surface distancer on which these calculations are based. Let us take the lateral surface as a possiblegram formed by the length and height of the gas bolder, and the frends by the circle that d-service be circumference.

This will be the result in round numbers :-

Nemation.	VOLUME IN COME MERSON, OR ASSESSMENT FORCE OF KILOGRAFIETS	Laboual Scarace of Surana Merges.	Parente Senace or Square Meture.
1	4 metres.	5 metres, or \$ more than the cubic metres repre- senting the volume.	0.8 metres, or 1 of the number of the cubic metres representing the redume.
2	250 metres.	80 metres, or § (about) of the number of the cubic metres representing the volume.	12-5 metres, or \$\frac{1}{2}\$ of the number of the cubic metres representing the volume.
3	6,720 metros.	720 metros, or § of the number of the cubic metros representing the volume.	112 native, or à of the number of the cubic metres representing the volume.
•	31,460 metres.	2000 meters, or d, of the number of the cubic meters recoverating the volume.	314 notices, or sig of the number of the cubic metros representing the volume.

<sup>\*</sup> Each cubic metre contained in the gus-holder represents the seconden force of about 1 kilogramme (2 lbs.).

This is to say, that with accostate of the dimensions just cited the surfaces opposed to the air corresponding to each kilogramme of asconsional power will be as follows:—

THE SCHOOL	EASTERAL RESPONS OF PACKAGE MISTREE.	Lessation schange in solution volume
For Number 1, it will be	1-1230 metes.	0-2000 metre, or   of a square metre.
For Number 2, it will be	0:3200 metres, or § (about) of a square metre.	0:0500 metres, or d
For Number 3, it will be	0-1071 meters, or }	0-0105 metres, or &
For Number 4, it will be	g-gg/16 melevs, or /c	6-0100 metros, or pla

Do not these figures speak for themselves, and show clearly the superiority of large over small acrostate?

The nuder will therefore understand the importance of this point for accutation in general. All doubts used give up to feet the imple facts we have related. Whetever care is taken to grantle adaption thoughtless and immoderate cuthusism, one cannot but arknowledge the arevasation just propounded, more particularly from the development of which it is reswerable, embrous all the dements of success.

M. David says that a satisfactory trial of this system would only cost 20001.

I have not yet seen any mention of a very simple locomotive power peculiarly adapted to acrostation, and suggested to me by an inventive farmer named Birt, who lives at Otterhurn, near Winehester. It is to construct elockwork machinery that is set in motion by a weight. The ballast of the acromator or the carge of a ship might be so balanced as to effect this.

M. Arthur Mangin, in his beautiful volume entitled 'L'Air et le Monde Aerien,' 1865, gives his opinion in favour of some bird-like machine, and cannot possibly conceive the successful direction of a balloon of any form; as he maintains "that a body must be always more dense than the medium through which it has to move."



Descript Same

## CHAPTER X.

## FEELINGS EXPERIENCED IN AFRIAL TRAVELLING IN CALM AND STORM.

## THE SKIES.

And round the horizon bent, With the bright enalt, and supplies wall, Doet overhang and circle sil. Far, far below thee, tall old tress Arise, and piles built up of old, And hills, whose ancient summots frome In the fierce light and cold, The eagle sours his utmost height, Yet far thou stretchest o'er his flight. Thou hast thy frowns-with thee on high The storm has made his airy seat. Beyond that post bine curtain lie His stores of hail and siest. Thence the consuming lightnings break, There the strong harricanes awake, Yet art thou prodigal of smiles-Smiles, sweeter than thy frowns are stern; Earth sends, from all her thousand isles.

A shout at thy return,

The glory that comes down from thee,

Bathes, in deep joy, the land and sea.

AT | gloriously thou standest there,

Beautiful, boundless firmament | That, swelling wide o'er earth and air, The sun, the gorgeous son is thine, The peep that brings and shots the day, The clouds that round him change and shine, The airs that fan his way, Thence look the thoughtful stars, and there The meek moon walks the silent air, The sunny Italy may been The beauteous tints that flush her skips, And levely, round the Grecian coast, May thy blue pillars rise. I only know how fair they stand Around my own beloved lead. And they are fair-a charm is theirs, That earth, the proud green earth, has not, With all the forms, and bues, and airs, That haunt her sweetest spot. We gaze noon thy calm pure sphere, And read of Heaven's eternal year. Ob, when, smid the throng of men, The heart grows sick of bollow mirth, How willingly we turn us then Away from this cold earth, And look into thy azure breas

For seats of inncorner and rest! BREAKT.

THE IMBRIDATE—THE STREET HEATTON—INTERIOR AT A TAXABLET—THE TOTALON MILL NOT EXTENSION A CAMBEL.

"A REPORT MOUSE OF THE GREEN OF BETTERIOR" THE TRANSLATION—THE TERMS NOT THREET.

THE REPAIRABLE CLASSING OF COLUMN—THANKSHITT OF MEDI—THE RESCRIPE AT ABORD OF GREEN OF THE COLUMN ATTER—CHARTITION—THANKSHITT OF THE PROCESSOR ATTER—CHARTITION—THE OF THE COLUMN ATTER—CHARTITION—THE TRANSLATION OF THE ALLOHOUS AND PROCESSOR AND PROCESSOR AND PROCESSOR ATTER—CHARTITION—THE TRANSLATION OF THE PROCESSOR AND PRO

I REGIX this chapter by again citing Mr. Monek Mason, as he is one of the ablest writers on the subject. This forms part of an appendix to the description of his voyage in the "Great Nasau" bulloo::—

SCHMARY OF THE VARIOUS PHENOMENA OBSERVABLE IN THE PRACTICE OF AEROSTATION.

The conveyance through the atmosphere by means of the balloon is a thing so entirely see generia, so essentially distinct in all its bearings from every other process with which we are acquainted, that no force of

reaching to if their copable of avoleting in the mind of an utter stranger to the art, any obequate notice of the procedure phenomenon which characteries their need and interesting node of tranquers. So downed, inteller, any it to said to be of any of those analogies which in other matter serve to apply the place of certain corrections in the determining the general results of even shartless otherwise the art an convinced for a incividual wave to see himself down with the intention of evoluterating to picture in his imagination the various elementators and impressions which develop themselves in the practice of streastines, with all the obstances which a thorough knowledge of the arts and ecinese in general could contribute to his solutionse, be wealt still arrive but at a very ready and impress representations of the real nature of the case in question. While for experimental or of forming a more correct originate by personal experience, it is not to be vanished at should much ignorance be found to prevail pour the blood of real contribute to to this the through interest in the doubt.

Much of this obsentity, it is true, might have been removed, and the mystories of the art brought within the reach of ordinary inquirers, had the caperi-ence of others been but turned to its proper account, and rendered available to the purposes of general information.

The first thing, then, which surface the incipient areasant in the context of his currer is the sense of extracollicacy pulse-cover which immediately assess you the discussed of the anchesin from the ground. No matter have against the bulbon before is disputators, no matter how wheat the inventionates under which this neutral is produced. The exclusing of the car, the varieties of the silt, the bulbon produced of the silter of the silt, the bulbon produced of the silter of the silt, the bulbon where the silter of the first of the individuals who can origingly to result in, 4 labors count of in the first of the individuals who can origingly to result in, 4 labors count of in minutes, and are seconded by other expert in terrors, as for a minute to school all other confedentions, and then confedent the mind of the veryer from the confedential origin of the school of the cutterprise in which to it.

Unprepared for each e-result, or occupied perhaps in other affections, the appreciate tyre is seldon in fact conscious of the exact moment of his departure, and instances are not infrequent in which the serement has been as far decreived by the unexpected sensitily of the situation as to have been transported to a very considerable circuiton, without being sears that the act of separation had been effected, smill it became forced upon his notice by the fast fading views of the assembled populous cheering his secret.\*

Excelled to the knowledge of the situation, a redden and most natural impails at first book the serement to hook ferwent, nothing however approxing in the direction is which that the admost tomoscopial projected into to affect he gar, the cyc heartistly assumes a downward covers, and he becomes at once model with a mass of a region of the contraction is which the is seated, the whole face of nature scenar to be undergoing near wireless and neighborh transferancies. In contraction of the macroline of the interview of the contraction of the macroline in which the is seated, the whole face of nature scenar to be undergoing sense wireless and neighborh transferancies. In committee of most price of the price of the individual of the contraction of the macroline of the contraction of the

Although the absence of all the ordinary effects of motion upon the human frame continues to mark the

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<sup>•</sup> A resarkable instance of this occurred to Mr. Clarico Green in this first accent, which took place on the occasion of the occusions of the Mayori, Green PV. Opproved with the here's the day and the indigent of the property of the control of the day and the finite of the property of the control of the occasion of the opproved his finishes when were holding the bollows to stillow it to raise their II it was to indicate the necessary of the order of the control that bounced him to not all sheles. In reducerating to of the crowd that bounced him to not all sheles. In reducerating to

in comply with his respect the austratus recelerably let the recels ally from his branches. Bowsauged from its leds, to bullon structurably the property of th

progress of the aeronaut at all alevations, and throughout the whole of his career, the peculiarity of his situation in that respect is never so forcibly urred upon his notice as in the commencement of the ascent (when the contrast between his late and present condition is freshest in his mind), and, though in a slighter degree, during those depressions which occasionally take place in the course of the voyage, when the balloon happens to be brought into closer contact with the serface of the earth beneath,

I have already adverted to the peculiarly delightful sensations that attend upon such situations, and among tham have remarked as by no means the least striking, those which arise from the consciousness of rapid motion. nantiended by those effects by which, in all other circumstances, it is ever known to be distinguished. No part, in fact, of the whole career of the aeronant bears so atrong a resemblance to flight, or more truly appears to realise the sensations we sometimes experience in our dreams, when elevated in fancy to the enjoyment of that delicious occupation. Here it is that the reality of the case is most strongly forced upon his notice, and the mind awakened by all the various avantoms of the rapid progression of the atmospheric current in which he ficate—the sounds of its resistance, is sign as it were out of the very bowels of the earth-the agitation of the treesthe varying tints of the upper surface of the woods and meadows as they bend simultaneously beneath the blastthe rapid retrocession of all the known fixed and stable objects upon the plain beneath-together with the everchanging features of the scene; all indications underliable of the reality of his progress, which every foot he recedes from the vicinity of the earth only tends to weaken and impair. Truly conscious of his motion, here it is that he is most strongly impressed with the absence of its ordinary effects, and feels the novelty and delight of a situation which in no other manner can be ever be made to experience. As he rises this feeling disappears, and he ceases to derive any extmordinary impression from the peculiarity of his situation, because, not being made sensible of the real state of the case from observation and reflection, he perceives no reason to anspect that there is metion, and consequently suffers no peculiar sensation or surprise from the absence of its ordinary effects. That the body should thus, in a manner, be insensible to the effects of motion in a balloon, will not, perhaps,

be deemed so surprising when we come to consider what are the means by which alone these effects are in ordinary cases made apparent to the human frame. As this is a new field of inquiry, for anght that I am aware of, the reader will excuse our taking a mere minute review of it than, under other circumstances, we should perhaps feel ourselves outhorised in hazarding.

In the pursuance of this inquiry, then, it is necessary to be observed, that the human body is composed of a variety of different materials, of different specific gravities, and endowed with different degrees of acasibility to presence, or other disturbing causes, to which they may happen to be subjected. When these are set in motion all together, by one and the same impelling force, a very considerable disarrangement of their relative positions must cases, or else a proportionably great resistance to that disarrangement, where the parts are so circumstanced as not to be able to change their position in obelience to the general impulse-

To make this clearer by an example : if a tray containing a variety of different sized globules of lead or other heavy material, varying in dimensions from a grain of sand to a feur-pounder, be placed at one end of a long table or heard fixed horizontally, and with a andden motion be made to slide forward towards the other, a marked difference will immediately take place in their relative positions from that in which they were placed at first. The larger and heavier balls, unable to acquire the same rate of motion, in the same space of time, and through the medium of the same impulse, will immediately fall a little behind the others, and all, more or less in proportion to their particular cir itertir, suffer a retrocession or loss of place, owing to the anddenness wherewith the first principles of motion had been attempted to be communicated to them. Wern these objects so disposed as not to be able to display the influence of the sudden acquirement of motion, by a change of place (as for instance, if they were all connected together by elastic ligatures, or imbedded in glutinous strats), the motion thus impeded would necessarily resolve itself into a reaction among the parts, producing unequal degrees of pressure, or communicating unequal shocks (where any liberty for motion was allowed) to the adjacent portions of the medium in which they were located. Now, this is exactly the situation in which the parts of the human body exist, and which we have sought to represent in the previous example, by the mere familiar illustration of the leaden globules.\* Prevanted by their structure and combination from following the coarse they would

experiment is merely on account of its weight, to avoid as much as possible the influence of the resistance of the stranspiece in checking the tendencies of the different objects to follow the course pointed out for them by the laws of projectiles. In the application of the example in the process of necestation.

<sup>\*</sup> The reason for our selecting that material as an agent in the | enzapple to the human holy no such consideration is required, as all the parts united in one common mass are by their nature protected from all such interference, except upon their external surface; and even from that they are, by the peculiar characteristics of the art,

assume, if allowed to act in obedience to the laws of motion, all the motive energy with which they have been endowed in tenemality rendered into receition, and being various in annount and variously exceeds, provide a disagreeable pressure or tendency to disturbance of the caudition in which the parts naturally exist whon in a state of pressure.

To this distratunce, then, I am inclined to attribute the probleties of the sense of motion in the human trans, which may thus be considered as morely a new mode of operation in the sense of feeling, or rather perhaps of their sinth sense discovered by our celebrated physiologist Sir Charles Bell, by means of which the mind takes cognizance of the relative positions of the different parts of the body without the instrumentality of the organ of sight or feeling.

Now we have by the law of dynamics that all bolics, without regord to their specific gravities, more with equal volcities used the same active legable in a marriading resident, "the only difference observable in their conducts being in the longth of their regulard one shad powers of passive resistance he currous, and they are considered to the same and the same and the same and the same and the considered to the considered of the relative positions of the objects on the tray, excelsional by the first induction of motion of the consequences with the observable to long out then sat which they are propielled remains the same. As it is again that demangement of the observable is long on the nast which they are propielled remains the same. As it is again the demangement of the contrades to long out the nast which they are propielled remains the same. As it is again the demangement of the contrades to long out the same of motion, one point in the train of consequences then becomes easily the contrades the contrades to long out the scale of the contraded to long as the nature which he is

Again, were those changes of motion (to which we have above alluded as being the only causes of the derangements that awaken the sense of motion) to take place in such a manner as not to be productive of those derangements, then would the epochs of those changes, like the others, fail in belong noticed, and the whole career of the individual, however varied, pass without the slightest consciousness of motion on his part. To this effect all that is requisite is the observance of a certain rate in the induction of those changes, whereby the rires inertiz of the different parts are overcome, and all are made to commence their career of equal motion at the same time. By a slow and gradual process alone this may be accomplished; for, however there is a limit to the quickness with which bodies will take upon themselves a given state of motion, there is no such limit in the opposite direction; if you proceed to invest two nasqual bodies with equal motions to rapidly, you will disturb their relative positions by investing the lighter with the full amount of motion, before you have entirely overcome the passive resistance of the heavier; but if you proceed ever so shedy to the same end, you will never produce a derangement of their relative positions by investing either with the full amount of motion before the other. Accordingly, to resort once more to our favourito illustration, if the tray of objects above mentioned were to be advanced gradually and with proper regard to their several exigencies, the atmost conceivable rate of motion might be obtained, preserved, altered, abolished, and renowed ad inflation without the slightest derangement in the relative position of the different component parts. It is almost unnecessary to add that were an individual placed in the same circumstances, the different parts of his body would observe the same laws and exhibit the same result; the consequence of which is, that under such circumstances, the sense of motion would not be awakened at all, and the irregular as the uniform progression pass equally unheeded and unknown.

Although a recurs and an acceptability and colours are not exactly the same time, por a regards their influence in the two of motion they may be considered as smaller. The office-weit internal parts of the beams finance, for influence, nor a desired in course; at the beams finance, for influence and included in course part and the same finance, in the colours of t

ame nate, and limenfore off-eding to provends for interference. "It The adaptive of the providing theory of the sense of softent physical properties of the providing theory of the sense of softent physical providing the providing theory of the providing the providing

interruptions. But the desagements alluded to, and crosses the sense of motion to which they give rise, are not expable of being excited to a very high pitch of energy by every species of interres tion which may occur to call them into action. From the very nature of the construction of the human from, these derangen of the parts can news, without actual reports lower, take place to say very considerable extent; and consequently the sense of motion. as we really find to be the cose, cannot be espable of great intensity. Like many other corpored 'and indeed all mental' improvious, however, the deficiency in intensity of action may be amply supplied by the pertructed continuous of its effects; as an illustration of which in unalogous cases, I need only cito the action of most medicinesfor instance, that of the emetic principle upon the stomach, which, neultered in its intensity, does not begin to act until the parts have for seme time been subjected to its influence. In the same manner the decangements which give rise to the sense of motion may be, and frequestly are, by the increased duration of their action, brought to exhibit very powerful and impromive consequences. To preduc that increased duration of action, it is necessary that the actus of Now this is asselly the situation in which the seressant is placed. From the moment the bolloon quite the ground until it returns to earth again, softiage over build except from societated collision,—which can or doe produce a change of mories sufficiently rapid to awakes the preception of his progress. Changes, it is true, do come both in the axis and direction of the source. Altertions is the discussion are continuely tables place with calcular or produced to the contract of the discharge of gos and ballate; as few seconds are frequently sufficient to make a difference of most themself for its lettered for its corner; yet the changes, arthing as they may be an server accomplished with the disprets of impetitudity which is necessary to swakes a sensation of their effects. Current also of different twictions and different kaveling as a since neutral presentation. But the suntant action of currents of air is never reddired their boards are not fined by cortein line. But these of the news sold substances, nor are the changes which may say to led to a smalled precedent line.

Debarred, therefore, in every way from obtaining a direct personal feeling of his progress, it is only by a comparison with the phonomean presented by known fixed objects that the seromant on ever ascernin feet, whether he is raulty in a state of quinescence or direction. This is nitelligence which his remarkiness alreas are incepabled or appropriage; it is the in judgment, with those missens or of his night, that he is faced to look for the solution of the question. Where the exterior of that cryam is desired him, as at night, during the prevalence of goog, where chook intercept hat where, or his markinarity of the subjects extends been been a need that the contract of the progress, may, the very extinction, it is impaintly he is able to devise. Such as commands in that which is fremed by sensor of the patheony; and the infinite desire it defined of the rate and direction of the hallows, I consider not the least whashe property of that impaints instanced.

The cust striking elementation in the order of succession, distinctive of the present subject, is the sudder constitution of continued aboutes of all incompletive resistance, the presences of which not is a pix to consider so essential a concentiant of hosensicities, especially when conducted with any massed degrees of special, officing in competition with the contractive of the contractive

notice be supported by a course of interruptions, occurring at such intervals as will not allow the parts to meower from the efforts of one demnging influence before they have been subjected to another, That this is the case as regards alternating metions—those, for instance, by which ass-sickness is produced—does not require to be illustrated: the interruptions, by means of which the sense of motion is marntained, are here sufficiently palpable. With respect to rotatory motion, however, the action of the demograp cames may not perhaps be quite so evident. Nevertheless, though more observes, they are not less decided, and, if snything, still more energetis in their effects. As all bodies in motion, when unraffuenced by disturbing causes, tend to proceed in right lines, the motion of bodies conveyed in the direction of a curve may be considered as really compounded of increment interruption to the rortilizens comme which the laws of nature incline them to surem. So for therefore, from being exempt from disturbance by the apparent equal-lity of their notions, the parts of a body perciving pound a contro are even still more incomptly liable to the demograp agency than where they are absolutely made to alternate, seen with violence, betwom two suterrore in opposite directions.

To the protrected direction of the sense of motion, thin, I am inclined to attribute all those cases where distressing symptoms follow

the leffiction of certain movements. To this expresition all the phenomena are reconcilable. Here we see the reason why a hear ingehing motion-the hearing of a ship at sea, for instance, but still more the rotatory motion (in which the disturbing influence is not only protected, but incomed is always attended by greater distress than a short, quick, alternating motion, however long continued, where the impetus of the parts becomes arrested before they have experienced the full amount of disturbance, and where, constantly cariflating on either side of their natural condition, they are never either long or for from the means of recovery. We also see the remen why in a rotatory movement the larger the circle in which the parts are convered, the less the distress; the tangent in which they tend to fly off more nearly coinciding with the segment of the curse in which they are detained. Thus, revolving rapidly on one foot, after the manner of the pircuette, is quarker in inducing uses than performing the gyration in a larger space, to the who are amused to either. The manner also is which habit rushles the individual to withstend the effects of the motions is also strongly in accordance with the principles of the above explana-tion, and might be illustrated by many analogies with other physical impressions.

and invisible agent, undeally assumes an upright posture, and stands, as it were, fixed, rigid, and inmovable, the build of the adventurer, nacconsists of all but the change itself, becomes attrack with the adventure of the contribution that some action of the standard property in reging closents have been suddenly tempered into transpillity, and as universal and unsastored colon induced upon the previously disturbed condition of the nightly powers of gather.

From this time ferward, small the conclusion of this flight, the same imprecision continue to accumpant the progress of the sartir brouget, weakened only in their creepy (like, indeed, shant all those prediller to the practice of this art) as, increasing his altitude, he diminishes his relations with the certa, and with those grounds of comparison, whereby also he datain a cancelonases of the real circumstances of the event in much to fat the absence of results, which are in fact only remarkable when mixed, and only mixed when particularly expected.

So long as the balloon is left free to pursue her own course muon the same level, unaffected by any of those excessive variations in her buoyancy, which impress upon her a rapid motion, spart from that of the current in which she floats (as when she ascends or descends at the commencement or conclusion of her career, or by the sudden loss of any serious amount of gas or ballast during its continuance), this state of things remains uninterrupted, admits of no qualifications, and is liable to no exceptions. Totally independent of the rate or direction of the current, it remains equally absolute whether the actual progress of the balloon be one, or one bundred miles an hour-whether it be on one coatinned line or embject to the most rapid and incressant variation. The greatest atorm that ever racked the face of nature is, in respect of its infinence upon this condition of the balloon, as attorly powerless and inefficient as the most unrufiled calm, the most unequivocal repose-To such an extent is this the case, so truly indeed is atmospheric resistance a nullity to the acronant, that were we to suppose him (by way of illustration) suddenly transported to the West Indies, the hirthplace and habitation of the ternado and the hurricane, traversing the akies at a time when one of the wildest and fiercest was exercising its nemost powers of devastation, looking down from his air-borne car and beholding houses levelled, trees approated, rocks translated from their stony beds and hurled into the sea, earth and ocean in muteal aggression encroaching apon each other's limits, and all the various signs of devolution by which its morelless path is marked, he might nevertholess hold in his hand a lighted taper without extinguishing the flame, or even indicating by its inclination to one side or the other the direction of the mighty agent by which such awful ravages had been created. No sooner, however, has the grapped touched the ground, and the slightest opposition been afforded to the progress of the balkon, than all this according tranquillity is at an end, and the aeronant for the first time becomes sensible in his own person of the real influence of that mighty element, of whose presence and power he had hitherto been able to judge through the medium of his sight alone.

The theory, by means of which the nucrealization of the strongbarre in serial averaginous in accounted for, is by no means as compliance at that by which it was from the consequence in the absence of the sense of the series of the sense of southern Friedling is and by means of the ordine of the situation, of difference man, in fact, were said between the not of the meahses and the of the medium of the conveyance (other fact affects to oversome the in desirable converges (other fact affects to oversome the indicated to the finear have been necessarily exercted), as long as both results at Berty to some necessarily exercted and the sense of the sense is the sense of the sense beyond that of the frequency is no material or a restriction of the course of the one beyond that of the deep report, no material or a restriction of the course of the one beyond that of the other parts of the course of a size of the convergence of the sense of the convergence of the course of the course of the convergence of the conve

As a general risk, however, it is to be observed, that this elascateristic discontinuous of atmospheric resistance only bolds good as regards the forbroad or pools per good of the bellow. With respect to its vertical, or as it may be termed, its active motion, that is bort which proved from the ceretical for one because, some decision from that state of perfect atmospheric repose will no both to exceinate flittle-milk, especially when the novements allocked to are accomplished with any considerable degree of rapidity. Upon the principle of this recitation, various strange blows been made to construct interments to approach to the construct, its demants to approach to the construct, its demants to approach to the construct, its demants as to expect the classes; its discussion.

indication of those novements, and of the rate at which they one effected, hitherts, however, it must be confissed without any antifactory-result. The generality of the changes are, in fact, much too slowly conducted to aford grounds for the establishment of a resistance sufficient to overcome the obstateles offered by the or siories, friction, deflective construction, and "the thousand natural life which or is belt in," and from which no species of instrument, however delatest, which depends on usefund and then fit is results, it estimpt; grants,"

From what has been before winted, the follilly of any attempt to apply this principle to the accordinates of the holizonsk intends of the hallow, which we passes of interment appositally constructed, or by charmation already from the differences between the rate of section of the hallow head, and that of light behavior can be able beyond a death. No sent differences, in the constance of their beyond as the sent of the hallow head of the previous for the constance of the sent of the section of the hallow and the sent difference in the direction to the preventived, in pay on one held to the account of some pocinting in its firm, or elevents in the direction for the improved upon it, and which, in the connect is the section of the preventived. In the direction of the circums are also in concert with the direction of the circums at the time prevention.

Bound, of course, by the same role, all cleude concepting the region of the same cerement in which the occurs of the balloon lapsops to be conducted, surface over certaints to charge the same efinances from that object as thy belief at the consumerousest. It is true that internal charges of form and position may at all times be discreased between the different parts of the same report partners, by any see who will take the truths the cranine faster progress attactively for a few minutes. Without, however, infringing upon the generality of the proposition here had fown, and therefore of form and position are amply consumble for our the own framepartum, clearing diffusity, and a waiving of other specific influences; either through their direct effects upon the forms and dimensions of the approximate goal in a bit observal that a change in form in, in fact, a change of paints into, in why remarks the constitution of the contractive o

The entrance despites into clouds, and the saft from the anna, can never the place without a change of altitude on the part of the aeronautical machine; an observation which may give some antidection to those who rate highly the danger of coming in context with clouds charged with electric matter, or entertain a fear of leing overshole in but wastler in the current of their securious.

One other consequence of the absence of stroughout resistants remains to be action [.] I more its infrance in antiquing the orders of a low temperature prough the human flows, and revelving regions on only shakulable verw delightful, which, but for this modification could were be extered without pains are narbured without danger. In a persion surrellard have absenced by the previous surrellard and extended in a constant and the state of the previous surrellard and the state of the previous surrellard and the state of a low temperature, I have many in add that the only previous when the article state temperature present outerwise previous state of a low temperature, I have many in add that the only previous when the article state to the state of the state o

To return to the aeronant whom we left some pages back in the act of commencing his accent, the reader must not suppose that all the circumstances and impressions which we have here detailed as consequent upon the change which the liberation of the balloon is calculated to make in his situation, or the same process of reasoning

The level of three strongs which I have seen is undestribely, and on Mr. F. Grapping on the the properties of the billions in which the this expedition was assumptible-oil, upon the principle of a shiele the the expedition was assumptible-oil, upon the principle of a standard, and ended of it is buy prility open at it good below to be shirt the action of the six in secretaing or discovability. To the other of the six in secretaing or discovability. To the other of the six in secretaing of somewhat the standard of the six in the six

of the particular instrument than to the principle of the contrinues the about the initiated to that is a efficient periods of the attaughters, while at the same time it was not sufficiently protected by the form of its morphotal-from the influence of the counterture of the contribution of the influence of the counterture of the counterture of the counterviolity, whereby its action in that former case was implained, it the substance of the counterture of the counter of the counterture of the counter of the counter
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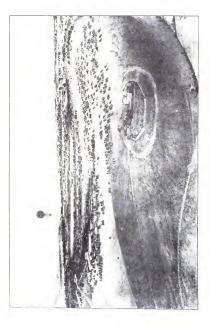
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ture by which we have found it accountsy to explain them, are either adopted or even recognised by the individual at that pertinate proofs in the varyer. It is not, indeed, at the time, certainly not the principal ground, that the account ever becomes orwise to the joint amount of his fieldings, or fully consistent of the real conditionations which they are to be destroised. Indeed, to serve at the latter of them conditions, requires the conditionation of the conditions. Indeed, to serve at the latter of these conditions, requires above y the order of the conditions of the conditions of the conditions of the conditions of the stress of the relative to be able at which is moment to relativity, and rever were they as inclined, the celerity wherewish the first operations of the security are consoleded, and the variety of the events and estimates by which they are succeeded, are such as to leave to time for the consideration of any one is particular, rathes to the attraccetation of all the result is by the frequent expression of the asygonizations, or the consistent recurrence in the condition of the first result is a consideration of the result recurrence of the conditions, the effects of which and by more than the conditions of the conditions of the conditions of the results produced the conditions of the conditions of the recurrence of the conditions of the co

Princ commonting therefore, upon the state of this own faciling, the attention of the sevenant is only and famility results to a consoleration of the "world window him," where, indeed, as was afterlise storrest organization wants him, in the prospect which his interesting electricis has sinced transactional presented to his view. No scora, in fact, how be electred the highest behalfer a principle of the highest state of the h

So, h, fact, is his impression which the direcutaneous of the case are not strengly obelisated by professe you has insid, and from which scholing has a speciel knowledge and first carelytics of the reality credit effectually powerer him. Without this sease of motion to guide his judgment, the only opinion he can form of his assert in accessarily, hough amountedway for warm from a busy none-desiration of the changes which it exceeds in the aspect of the sease around him. Now, as by the nature of things, all these changes proceed with repulsidiationally intensity, as the distance from the very of the spectate becomes interessed," was much the same continuation of the contraction of the surface and the contraction of the contraction of the contraction of the surface and the contraction of the surface and the contraction of the contraction of the surface and the contraction of the contraction of the surface and the surface and the contraction of the surface and the surface and

\* The linear dimensions of objects being determined by the i appele upder which they are seen, necessarily vary in the inverse ratio of their distances from the point of sight. By the same rule it follows, that the superficial dissensions, upon which their apperent sizes depend, must vary inversely as the squares of the distances from which they are beheld. Thus, a body even from any given point would appear four times as great as if seen from twice the distance, nine times greater than it would appear from a distance of three times the amount, and sexteen times as great as if the eye beheld it from a position at four times the original distant If, in the place of the preportionals here employed to designate the programion of the agreement decrease at stated intervals, we were to substitute absolute anusbers, and estimate, the dimensions of the shiret as seen from a given altitude, my one hundred feet, at the value of one hundred and forty-four, were the eye of the spectator removed to twice the distance, or to an elevation of two hundred fort, the number which would represent its apparent magnitude would be but thirty-six, thus showing a difference of one hundred and eight degrees between the appearance presented by the same object at the two stations in favour of the former. Were, however, the eye to be still further removed, to an elevation of three hundred feet (being an increment equal to the previous one), the measure of its appearance would be sixteen, thus denoting a loss of only

twenty degrees upon the second progression; while nine being the expression of its visual magnitude at the bright of four hundred feet, would indicate a difference of only seven degrees lost during the process of its removal through a third interval, equal in amount to either of these which preceded it. In such a series as this it is ennecessary to observe that an elevation is very soon attained where the differences occasioned by equal increments of altitude reverse so minute as to be inappreciable by the ordinary exertion of the senses. Now, as the impression of his ascent in the mind of the account ideprived, as we have shown him to be, by the peculiar circumstances of the case, of all absolute some of his translation) is enturely founded upon and regulated by these, the centar effects of his removal, it follows that all personal knowledge of his ascent must rapidly and progressively become fainter, till at first hundreds and finally thousands of feet pass unnoticed, at least as far as the eye is capable of judging by a consideration of the altered aspect of the objects it surveys. Hence the difficulty of ascertaining the vertical direction of the balloon's course by the more intervention of the night alone, and the inestinable utility of the baremeter in afficuling indications of the many changes which are constantly taking place in the level of her progress, and which, in default of climations, would otherwise be unobserved, until perhaps too late to remedy them without inconvenience.



The case is one to which scaling analogous exists in nature or one be remedely the ordinary exerctions of it; consequently the effocts and improves to which it gives reas are seen has one more the experienced but in a like situation and under exactly inside circumstances. In no other moment for even the individual has clustered as the experience of the control of the experience of the control of the control

Under the impressions we have here fashly redeavoured to orphin, and which time can notifier obligation represents outlied yourseous, the seronant quits the earth to assume a station in the zenith of his own horizon. In a few seconds all those capital changes by which, at I have just stated, the first proceedings of the secret are invariably accompanied, have subsided; and the prospect has become sufficiently composed to admit the minuter contembalistic of the contents.

There projected upon a place at right angles to his line of triates, the whole alignest nurface of the earth lies attricted beauth in, declining an heterogeneous display of nutters at some the nois interesting and incompressing. Distances which he was used to regard an important, contrated to a past, objects once imposing to him from their dimension, devidually into inquisitations; localities which he wave beheld or aprected to beheld at one and the same view, naming side by ride in friendly jurtsportion; all the must striking productions of art, the most interesting variation of attans, toward notwargs, and and had, nountains and placing, incide all updates in the one cover, appear before him as if enddeatly called into cristance by the magic virtues of some great evaluative value.

It is not, however, to the objects alone, sugnificant and interesting as they may be justly deconed, so much as to the modification they undergo from the unusual namen to which they are reivered, this is mishly strittinated that pectiture effect by which the terrestrial landscape is no notably distinctioned in the estimation of the serial solution. Some in the fine place from advance, them in the fine place from a done, everything that much this toy smoot! I wide are send super, and advance, from it fine place from a district the serial solution of the serial solution is the serial solution of the serial solution in the serial solution is the serial solution. In the serial solution is the series of baildings, the typer surface of words, these parts, in short, of all objects which by their ansured or artificial pointion have, histories have a circulated from his view, as now abstrate the only once that one width the scope of his observations. Indeed I can heatly conceive a prospect more interesting, both from its norrely and the explaints impression as which it is calculated to give rise, then that which a righty world early developed processing within a few yards from the level of its upper artiface; such a secon such unde a situation, for landscape, at that onlying by an what we found amendment unaequetally becomes developed where the resultion of the respection which there are benefits on the remindation of the expectation which there are hely also of the processing artifacts as has beginned as the termination of the expectation which terminal to the templation of the expectation which terminal templates are also as the surface of the templation of the templation of the templation of the expectation which terminal templates of the expectation which templates a the templation of the expectation which terminal templates are the expectation which terminal templates are the expectation which terminal templates are the expectation which there

The large, remarked sames of ode, green follows, following generally the character of the subjects onto oil, new voiling into mounts, there wholing into hollows, a fupular personaging the observed is subject so of conducts constitutes interested with reads or paths; occasionally opining to expose anall portions of the genomebral, pathese of maile, of this revenue of a more quarket expertation, feated of their mounts from their congenious the pathese of maile, of their revenue of a more quarket expertation, found to their households and dispersing to very direction over the surface of the such; the allement approach and return of the helicologic in constant of the surface of the surface of the surface of the surface. It is almost a depression of the vallers, introducing to part thereis innoceasible by businn menus; these and schoolsed order constantes and effects of niner rots and been swilling influence, combine to form a seener of exchantests in which the place of the vallers, in major applied by that of the beautiful and the pitterneum. Now flow the places of the vallers, in any applied by that of the beautiful and the pitterneum, Now flow the places of the vallers, in any applied by that of the beautiful and the pitterneum, Now flow that of the departs of the pitterneum of the path of the vallers of the path of the path of the vallers of the path of the path of the vallers of the path of the vallers of the path of the path of the vallers of the path of the vallers of the path of the path of the vallers of the path of the vallers of the path of the path of the vallers of the path of the path of the vallers of the path of the path of the vallers of the path assignable, is here to be perceived; nor any of those apparent variation in their disconsions which uniting serve in indicate their progressive remoral from the point of sight, when situated in or about the same line of visual observation. All the ordinary qualifications of ruch scenes become, in fact, annihilated, and the eye for the first time beholds a pixture of nature on the vastes such, both as to size and magnificence, in the occarrection of which none of the complicated laws of linear percented; are at all invalved.

As the balloon continues to accord, acorder events precliairly begins to display fined in the vividence of content, the mend-had advances of continue by which the different fortunes in this terrental propert on equalities and which, trangaleoning with the interesting distance, never feesible them to long as the object themselves continues to be disrupted softly. The road, traver, and active the indige questioners, belong fortunes, next continues to the disrupted interest in the continue of the continues to the continue of the continues of the continues of the continue of the continues of the continues of the continues and declarate of the continues of the continues of the continues and declarate of the continues and declarate of the continues o

This singular property is attributable to two circumstances, the union of which is another peculiarity of the art we have taken upon us to illustrate, namely, an increase of distance between the objects and the spectator, ettended by a corresponding decrease in the density of the medium through which they are beheld; whereby the minuter features of the lines by which they are bounded (and on which the irregularity of their oppourance depends) are exclusively lost to view, the objects themselves remaining as clearly distinguishable as ever. The process by which this conclusion is attained is very simply explicable on the grounds of the difference between the optical offects of absolute remeion from the point of sight, and those of mere obscuration upon the visual condition of the material world. Although the end to which they both conduce may virtually be the same, namely, the exclusion of the object from the view, yet their modes of operation are extremely different, and during their continuance give rise to very different phenomena. The indistinctness which the increase of distance, per st, occasions in the aspect of an object, is the consequence of its apparent dissination; while that which proceeds from the obscuring tendency of the medium through which it is beheld, is the result of a concentrate, more or less partial, in proportion to the density of the said medium or the quantity of it which intervenes. By the former, the objects or the parts of objects are abstracted from observation in the order of their arrend size, communicing with the smallest; by the latter, all are simultaneously and equally affected without regard to their dimensions. Now sharpness is a condition of the outline depending entirely upon the apparent absence of all parts bearing a small relative proportion to the whole; that which, therefore, removes from the night such parts exclusively, conduces towards the production of the condition in question; and such an agent is distance, taken abstractedly.

An automist to this routh under collassary circumstances, however, exists in the general inclinateness which covers speach the question of the simple models as in granted calous, which is a such as in interests by the very convenience of the contract of

As son as the adventurer has sefficiently recovered from the influence of those, the first and most producinate impressions, to be able to finer this situation is the other preclusities of his case, he becomes gradually struck with the astronoliusy degree of case wherevirth be feels himself olde to regord his situation, and the total obserce of the those sensations of galillows and meant anality which has he always first and conceived inseparable from producing apparently analogous to that which be at present complex. Instead of through the ben might fairly be unproof infinited, at the prospect so unsensately planted before his; instead of drawing has the might fairly be unproof infinited, at the prospect so unsensately planted before his; instead of through the as it were, into hisself to escape the full acknowledgment of the precarionness of his situation, be in astemished to find hisself intestly posing over the new leaft in the book of nature, which trimphates at tha just enabled him to peruse, and for from troubling at its contents, enjoying in perfect tranquillity of mind the wooders it is continually undelling to his view.

Nor is this spirituply by any monon restricted to solitory cases, or dependent in any way upon the physical or neutral constitution of the parties by when it is experienced. In all neutral promised or every age and ext, and with every imaginable distinction of obsaster endowed—the hold not the finishmented—the strong and the weak —the buildy and the finishmen-equity) concern in subscheddingly in the energiation part have there are the most with or so least of any case of the numbers who have hallowed much particular third of the first, that ever complained of which, in the connectment of least, must have been could't reasons to them all.

From the entirest ages of the set, and even still (though owing to its more extended practice, in a less disprets, this possion extension has ever from done of the sources from which the practical answard to advers, the content and entire the extension of the entire that the extension of the entire that the extension of the entire that the extension is a quantity part of the entire that the extension is a quantities was no preferred example; must give not all the enters as it is from the effects of these sensations in approachly staller cause to alternate previously, it is no wonder that man should tail with an estratinging experience, the same that the extension of the other at the faction to resist the assertion of being which, is that read presence, preve superior to every service of beams waters, done in the example of being which, is that read presence, preve superior to every service of human waters, done to the example of being which, is that read presence, preve superior to every service of beams waters, done to the example of the e

Why the elevation to so newonted an excess by means of the balloon should not be ettended with, to say the least, an equal degree of giddiness to that experienced when standing upon an eminence on the immediate surface of the earth is a circumstance which has been much canvassed and variously accounted for. By the majority of those who have considered the matter, this singular privilege has been supposed to be owing to the want of a visible connexion between the earth and the balloon, whereby the eye is precluded from measuring mechanically, and the judgment from poinfelly criticising the eltitude to which the individual has been raised. That the want of a connexion is the agent by which the result in question has been wrought, I have no doubt; as this, in fact, is the only characteristic distinction between the two situations; but that the mode in which it is said to operate is not the true one is pretty evident from the fact, that there are many situations which observe the same condition of a want of visible connexion with the earth, where the sensations in question are nevertheless found to prevail with numitigated severity; as, for instance, in standing upon the nummit of the monument of London, from whence all view of the pillar Itself is excluded by the peculiar projection of the parapet; while on the other hand, situations frought with on equal degree of opparent danger abound, in which the connexion in question is emply discernible, without in the least contributing to excite a sentiment of his danger in the mind of the individual exposed to it; as, for example, when he stands upon a narrow plank, or bridge, firmly extended between two percendicular eminences, like that generally known as the "Pont do Diable," in Switzerland, and from which ell apprehension of felling over has been removed by the presence of a sufficient protection in the form of a balastrade, or broastwork.\*

From these examples, then, we clearly ascertain that the mere obsence of a visible connexion is no

Another proof of the light over of the condition of the informs in 1 there is no quotien that, however constant of its accurity by an modifying the ensatines in quotien. The tonoughility reprises all ensature of the nature of the nature, and in constrained, and it is not related in the observable of the state of the nature of the nat

more satisfacts in pervent, thus, its presence is to commine, the production of the senations allheld to, in circumstances attentives calculated the exceeding or suppress them. But the trible is, that the mostal present of comparison, to the west of which the seresant is supposed to be included for his especial forcedom from pervental abure, not have rauly little or emitting to do with the confliction of his case in the aptorishes. It is not, by any means, in properiors to his alreaden that the enusities in question display themselves, nor studies on the top of a coefficiary hours of the series, and except the sensitie of the explost of Sc. Dark Calchely, so fir as theat as the question of abitrabs is concerned. All that is required is, that the distance he such as a study by the mind that value injury would account from the fall were it to occur. Now the horselogic it ishalan without the aid of any visible commendation with the earth; conceptorly in could present it would investigate when a value of the contract of which it is very present it would investigate when a contract of the contract of which it is very present it would investigate that the contract of the contract of which it is very contract.

The process, therefore, by means of which the deficiency of comparion in the case before us conduces to the admitted result, is nequestionably different, and the difference I take to consist in the light in which it disposes the mind to regard the secerity of the sustaining power. In all situations in which grounds of appreheusion exist, and the appreheusions themselves ensor, a sense of personal insecurity may be decidedly affirmed to be the mainspring of their existence, the point npon which they hinge, and by which, in their continuance and amount, they are entirely and involuntarily determined. Now as there are but two casualties by which the personal safety of the individual so circumstanced can be compromised, namely, the loss of his equilibrium, and the precipitation by his weight of the fulcrum on which he relies, it is clearly to the involuntary dread of one or other of these two events, or the combined agency of them both, that the scusations themselves are to be ascribed, and of the nature of which, in quality and amount, they may be said in a manner to partake. Both those causes of alarm, however, are perfectly distinct, and, like the sensations to which they give rise, capable of acting either separately or in concert, according as the particular circumstances of the case may incline. How completely the exemption from any grounds of alarm on the score of the latter of these (the apprehended instability of the stataining power) is inadequate to save the individual from experiencing the full force of the impressions in question, while his condition with regard to the former (the insecurity of his equilibrium) is such as to give sufficient cause for their pressuce, it is unpressary to demonstrate, both because the position is sufficiently evident without it, and also because the argument to which it tends is not needed in the illostration of the present question

That the security of the individual, in respect of the resention of his equilibrium, is no har to the prevalence of the sensations in their fullest force, whenever the situation in other respects is qualified to call thom into action, is, however, more to our present purpose, and though perhaps not so generally admitted, not the less true; as may be proved by any one standing upon the brink of some parapeted eminence, the whispering-gallery of St. Panl's, or any other situation alike precipitous and yet protected from the danger of falling over; or when, extended at fell length, he endeavours to peer over the edge of some steep declivity; all positions from which the possibility of losing the equilibrium is removed, and the apprehensions of insecurity completely transforred from the individual himself to the fulcrum mon which he rests. From the consideration of these facts, taken in conjunction with the numerous examples we have already detailed, wherein even the ordinary defouces of the art have been with perfect impunity dispensed with, we ascertain one important point in the train of our investigation, viz., that it is not to the peculiar construction of his vehicle, and the protection it is calculated to afford against the dangers of falling out, that is in any way to be ascribed the remarkable freedom of the aeronant from the rigour of those impressions to which his situation is other respects one would be disposed to imagine above all others especially liable. Indeed, the share which his advantages in that particular can have in determining the singular tranquillity of his saind could nover he of any very great importance: inasmoch as, after all, the danger arising from this quarter is but of a miner note, compared with that occasioned by the insecurity of the su-taining power. The one is to a certain extent dependent upon the individual himself, and may be overcome by strong exertion, long habit, and particular constitution; the other is a casualty entirely beyond his control, against which no exertion of his own is available to protect, and to which no habitation, however extensive, can in the least reconcile or inure him.

Were there grounds for apprehension, therefore, in any way imputable to the condition of his austaining

power, his fasher that the decrementance of this defination in other respects would sever have been writible to their suppression; as stillatory without, thereine, that mose such at all select. It while, flow, are we to asserting the single exception to the usual rule, in favour of the power by which the accessarie is public? or in what manaer does the ward of connection, which is in early perfectively, contribute to the satellihoustic of that immunity which it pre-ministry unders above all other attentions to which may shadew of singley in at all the satellihous the satellihoustic or th

As long as the circumstances mon which the fate of an individual depends, are such as to awaken in his mind a doubt of their competency, a tranquil enflerance of his condition is entirely out of the question. The infinence of necertainty, at all times in cases of personal alarm, more painfully insupportable than the actual presence of the thing apprehended itself, is nowhere more strongly manifested than in situations of the nature of those at present under consideration. The bare suspicion, that the falcrum upon which he relies is about to break away and fall from under him, when once raised in his mind, is an idea so replete with horror that nothing short of absolute conviction, acquired through the evidence of his own senses, is capable of producing confidence sufficient to enable him to bear his situation with anything like equanimity or entisfaction. It is of no avail to the pacification of his fears that any one should remind him that the brow of the eminence upon which he stands in fear and trembling less borno the brunt of ages and the weight of hundreds, or that the lofty column from behind whose guarded buttlement he can scarcely persuade himself to look forth is really secure, and that its perpendicularity, from which it appears to him to be in the very act of inclining, is a condition much too stable to be cancelled by the weight of a single individual; so long as his senses continue to indicate a possibility of the occurrence of what he dreads, the assurance, may, the knowledge of its improbability is quite insufficient to nentralise their evidence and overpower their suggestions. Indeed, the process of reasoning is an undertaking far too elaborate for the occasion, even were the individual disposed to encourage it. In situations of such impending physical peril, the mind has neither time nor calmness sufficient to enter into a calculation of chances, or to balance the arguments in favour of destruction and those against it, with a view to being guided by the result. The consequences of the conclusion are much too important, and if unfavourable, far too terrible, to be weighed for an instant; and the mind at once rejects with horror any attempt to reconcile it to a situation which allows of the chance of an issue fraught with such irreparable mischief, and teeming with distress even in the very thought. From all these painful impressions nothing but a conviction of his security can ever entirely relieve him; a conviction obtainable only through the exercise of his powers of sight. Any tendency towards concreiment on the part of the power by which he is sustained, operates to an enhancement of his anxiety, not only from the natural impulse of the mind, which we have before noticed, to magnify the terrors of the "unseen," but also from a consideration of the fact that any difficulty in the way of the inspection is itself a proof that the construction of the fulcrum is of a nature to realise his worst expectations. The approximation to overbang the base, the ruggedness or irregularity of the declivity, circumstances on which its stability is principally dependent, are conditions in fact not only cognizable to the sight alone, but indicative by the facility with which they are submitted to its notice, of the actual state of the support itself in those particulars.

The exclusion from his view may, in fact, be taken as the measure of the inscurring of the individuals and the arbitate of his faces. In proportion as the fafterm approaches a test in which scattal partle instances in the interest of its factors, and the second of the interest of its factors, as one as it has reached a point in which the precipitomson of its inclusions has itselfs excluded if from the sight of the individual standing above, the stability of his position ceases to be absorbed reposited properties of the individual standing above, the stability of his position excess to be absorbed reposited properties of the individual satisfact adviser stable, and, under the double influences of real and approximately faster of the individual assume a dorber shade, and, under the double influences of rail and approximately designed to the contract of the properties of dasper in his expect on militar delication or approximate the contraction of the substitute localization in quantitude has no his approximate the contraction of the substitute localization in such contraction and adoptive the contraction of the such in the contraction of the substitute localization of the sucreas. It reals that the contraction of the substitute localization of the sucreas. It reals that the contraction of the sucreas is real-order in the contraction of the sucreas in Particular and the sucreas of the contraction of the sucreas. It reals the sucreas of an absorbed to particular, New York, Relying and entirely dependent by articulary. Relying and the sucreas is the sucreas in the contraction of the contraction of the sucreas. It reals that the assument in the contraction of the contraction of the sucreas. It reals the sucreas in the contraction of the contraction of the sucreas is real-order in which the assument in the contraction of the contraction of the sucreas. It reals are also as a sucreas and the sucreas is the sucreas and the sucreas in the sucreas i

entirely upon another quarter, he soldes sees not focks for a support, the inoccurity of which he has reason, to apprehend. The grover by which he has been roised at list the has to lot to lot, on dist mulcionization, and the second of the mind admits to be all-sufficient neglicited to destroy these imprecisions by solutionizing an appricion that styre to the bang down, of welf-intern neglicited to destroy these imprecisions by solutionizing an appricion that styre are real means by which the equilibrium of the machine was multanized, góddiness and all the train of attendant symmen well. I have no doubt, be the immediate consequence of the second of th

At the notestate licercoses this distance from the earth, two ricrementances arise to give little to new radiation, and still first how restrictions and enablisment, non-interesting and experiments and enablisment and enablisment in the restriction is to be notified as only predictive of the still that therefore becomes facility directed to the condition and peculiarities of that into which he is ever, for the first tilline, postage, done to intered himself. The clouds which he believe he holds theweigh galow his lock now begin to gather awound and beneath him, and, ninging with the various finitives of the exert, server at the cloud which the believe which was only and content of the co

With respect to the intervention of these bodies, however, the particular epochs at which they make their appearance, and the influence which they are capable of exerting apon the surrounding world, it is impossible to affirm anything with cortainty. The circumstances upon which they depend, and by which they are entirely modified, the infinence of the weather, the condition of the atmosphere, the times and seasons of the year, the nature of the country, the very hours of the day, are matters too indeterminate to allow us to involve them in any general illustration of the career of the serial voyager. Occasionally, for instance, clouds lie so low that, ere the balloon can be distinctly ascertained to have entirely quitted the earth, she has been received within their limits, and become entirely enveloped in their watery folds. Sometimes, on the other hand, these objects are disposed at such a height, that the balloon either never comes into contact with them at all, or if perchance she should have penetrated through one layer, continues to behold another, eccupying a still remoter region of the skies above. At times again, these variable bedies are merely partial, affecting but a small portion of the aerial prospect, and arranged in different masses at different levels, or different stations must be same level-a disposition I conceive the most favourable to the views of the aeronant, as affording the best epportunity for that mingled display of earth and heaven which constitutes the chiefest source of his enjoyment; while, lastly, it will frequently ocear that the whole face of the heavens is so completely overspread with clouds, that from the moment the aeronant has once infringed upon their limits, natil the actual conclusion of his career, earth and everything that partakes of it becomes entirely excluded from his view. Of this nature was an ascent I once experienced, and of which I attempted to give an account in a letter published in the 'Times' nowspaper, October 21, 18:16. To this letter I beg to refor the reader as containing the best illustration I am able to afford of the inference of these bodies, and of the particular offects and impressions to which they are calculated to give rise.

From the gost variety of which they are succeptible, it is therefore portty drow that very little case, very by the seromant historic, less affirmed with one approxy of carriage as the particular effects which the cloud creation is likely to produce spose his veryon, before the actual mounted if it ascertime. One piece of information between of methods are carried as some and the contract of the state of the circumstance, as contract circumstances are carried as some and the state of the circumstance, ander cortain circumstances are caused below to deduce the carried as contract, and cortain circumstances are caused by the contract of the state of the circumstances, and cortain circumstances are caused by the contract of the state of the circumstances, and as the contract contract of the contract of the state of the circumstances are called a superior contract of the contract of th

This information is founded upon observation, and is an inference from the state of the worther at the time with respect to the presence or chances of rais; as for as it goes it may be ricked upon a perfectly established, to a degree of correctness, indeed, that for untermological facts are capable of statisting. To reduce it to a general residual contraction of the state of the

relied upon; it has been confirmed by the experience of Mr. Green, throughout a course of nearly two hundred and fifty ascents, and corroborated by that of various other aeronauts, both at home and abroad, with whom I have conversed upon the subject.\* If the invariable coexistence of two circumstances can at all be received as a proof of their relationship together, as cause and effect, the share which the temperature has in determining the condition of the clouds with respect to the discharge of their aqueous contents may be unequivocally inferred, and the above phenomena, upon such grounds, easily explained.

Te return from this digression; Varied as are the positions of the clouds, and the forms under which they present themselves, the station which they occupy in the realms of space is confined enough, and, comparatively apeaking, but little removed above the immediate surface of the earth itself. As a general rule, the natural region of the clouds may be stated to be a stratum of the atmosphere, lying between the level of the first thousand feet and that of one removed about ten thousand feet above it. Not hat that occasionally clouds may be found that treapses very considerably on both sides of the bounds here assigned to them; sometimes negetrating in wreaths of mist te the depths of the lewest valleys, while, on the other hand, long after the account has passed the upper level of these functed limits, some faint indications of their existence may still be seen, partially obscoring the dark blue vault above him; such excesses, however, are by no means frequent, and may, in fact, rather be considered in the light of exceptions to a rule than as evidences tending to impagn its general correctness.

It is certainly not to any inability in the medium itself to support thom at higher elevations that is to be ettributed this restriction of the presence of the cloud creation to the inferior regions of the sky; for where the aeronaut, with all his solid mechinery and ponderous oppurtenances, can penetrate and abide, assuredly there must be ample means of support for bodies which, by their unlimited powers of extension, can assume almost any degree of specific gravity, and, as it were, adapt thomselves at command to media of almost every imaginable degree of tennity. Rather to circumstances connected with their original formation,--- the distance from the source from which they are drawn, the want of that degree of temperature necessary to determine their existence as vapour, perhaps also certain electrical conditions in the atmosphere affecting their dispositions to unite in the form of rain; to these and other circumstances, andayourable to their generation rether than to their support, should perhaps be ascribed the confinement of clouds within such narrow limits, and the absence from the upper regions of the sky of all those volatile bodies which we, in respect of our own more humble stations, are wont to consider as the embloms of ethereal pre-eminence and the types of all that is remote, lefty, and sublime

The simple circumstance of their comparative elevation, however, is capable of exerting hat little influence apon the prospect of the serial voyager, unless, indeed, he is contented to confine himself to the mere threshold of the element he proposes to survey; his increasing altitude very noon places him in a situation from wheere all things appear equally depressed, and from which judged be could with difficulty ascertain, by the mere aid of his sight, whether the clouds he is observing are really reposing upon the surface of the earth or seated at an elevation of several thousand feet above it.

Should the condition of the sky new prove to be of the nature of that alluded to, -where, for in-tance, a dense lever of clouds completely intercepts all view of the earth, the aeronaut will probably have an apportunity of observing another phesemenon connected with the disposition of the vapoury strata,—the beautiful manner in which, even when under the influence of rapid motion, they seem to accommodate themselves to all the variations of form in the surface of the adjacent soil, rising with its prominences and sinking with its depressions; displaying, in short, a "coenterfeit presentment" of the country ever which they lay, and enabling the spectator

\* Two most remarkable instances confirmative of the truth of this observation occurred at the close of 1836. On Wednesday, the 12th of October, an ascent of the large balloon took place from the Vasukall Gardens, under the circumstances comprised in the former illustration. The sky was completely overspread with ele and torrents of min fell incremently during the whole of the day. Upon quitting the curth the buildon was almost immediately enveloped in the clouds, through which it continued to work its way upwards for a few seconds. Upon emerging at the other side of this dense renews, a vacant space of some thousand feet in broadth intersected, above which lay another stratum of a similar form, and observing a similar character. As the min, however, still construed to your from this second layer of clopds, to preserve the correctness of the observation, a third layer should by right have existed at a of a mutual dependence between them.

still further elevation; which accordingly proved to be the con-On the enhangement occasion of the except of the same balloon, the following Monday October the 17th), an exactly similar condition of the atmosphere, with respect to clouds, prevailed, more corporated, ver, with the slightest appearance of min. No somer had the balloon passed the layer of clouds immediately above the supface of the carth, thur, as was anticipated, not a single cloud was to be found in the firmens at beyond; an unbroken expanse of clear blue sky everywhere embracing the firstly plain that completely intercepted all view of the world beneath. The close occurrence of these two cases, and the very striking exposition they affected, were, in fact, the elecumetances which first drew my attention towards the phenomena in question, and led to the adoption of the inference to form, as if were, a sert of phenological estimate of the character and disposition of the material world within Intede, I have heard Mr. Green declars that, with the hird-eye knowledge of the country his long experience has conferred upon him, he has frequently been able to determine beforehead the district into which he was about to decread, at times when, from the general consenherent of the hardwape, such information must have been otherwise allogether mutationable.

The next favorable errangement, between, for the views of the seriestant who fields an interest and a graditation in the other of the pictures, in elocability that in which the doubs, from their backs and disconnected notes, upward at mospil niterals throughout the rappy spece of air, shain consistent glimpses of the court in different directions, only passing gradualty over its seators, in secondar result as extra-suppression, to the contribution of which horizon and court is equally contribute that it is difficult to determine to which in ward the palls. Such secons, wheree, no most fast the pass, nearely veries for the paperdil are which in ward the palls. Such second, wheree, no most fast then pass, nearely veries for the passing the pa

But set the half-on has already passed the limits we have assigned to those "boary riders of the half-of all is now rapidly surroung her course into realms hitherto unknown to man, even on the unumits of the high-out mountains accordable to his exterious. Here then let us pause for a moment to take a hasty glazace at the nature and condition of the seem around, and the sentiments and impressions it is naturally calculated to produce upon the mind of the arrial behalfer.

With less numerous subjects for the exercise of his senses, it must not be supposed that these, the remoter districts of the othereal domain, see hy any means deficient in grounds for enjoyment even of the very highest order. It is true here are none of the usual combinations of form and colour which give such zest and variety to the terrestrial landscape; none of those delightful sounds which, pervading the whole hebitable world, maintain the idea of animation even in the veriest desert; none of those fragrant exhalations by which—as it were, the music of the vegetable world-every tree and flower gives vent to its own particular sentiments. These, it is true, there are none of; but even in their very absence, the aeronant fluds a source of gratification, more intense, at any rate, if not more interesting, than one with which their presence could have supplied him. Undisturbed by the interference of ordinary impressions, his mind more readily admits the influence of those sublime ideas of extension and space which, in virtue of his exalted station, he is supremely and solely calculated to enjoy. Looking out from his lefty our in every direction save one, and that, one from which similar sentiments never before propeded, a boundless blank encounters his gaze, unbroken, except, perhaps, by bodies whose thin aerial forms and fleeting aspect constitute them sole fitting occupants of such domains. Above and all around him extends a firmament dyed in purple of the intensest bac, and, from the opparent regularity of the horizontal plane on which it rests, bearing the resemblance of a large inverted bowl of dark blue porcelain, standing upon a rich mosaic floor or tea-clated pavement. In the zenith of this mighty hemisphere, floating in solitory magnificence—unconnected with the material world by any visible tic-alone-and to all appearance motionless-hangs the buoyent mass by which he is uphold. The world he has quitted, and that towards which he tends, seems to his fancy almost equally remote; and, as he endoavours to seen the empty vault that divides him from the certh, he involuntarily imbibes a sentiment of immense vacuity, which no other situation and no other scene is capable of communicating, It is not that the interval through which his eye has to travel in reaching the ultimate scope of its views le really so must: for what, after all, are the few thousands that constitute the utmost elevation of the aeronam, compared with the countless myriads that separate him from the nearest visible object of the external universe, and which, stretching for ever above his head, lie ready at all times to meet his eve whenever he pleases to direct it thither?

It is not, therefore, in the more second of intervanispapes inself that consists the possible force of in impreions, but tack, boarded to a creatin extent by known and recognised limits, in the effect produced upon them by glainance, be loss a measure for for magnitude to which the mind be combined to refer. From ereck a resource be in entirely percluded to weak to follow not bit by exp the boundards shape of finding extension is no approximately object there appears to intercept the view, or regulate his judgment; he sees excluding and seeing totaling can accountly from no definite exception of those make it is explain to intelling. It shows the form as estimate, of species of the contribution of the state of the contribution of the contribution of the best of the contribution of the contribution of the brightness as often exercised of the helders of which, all people, persiage, nor not assemptible, whereas to the individual shot state it if the age is view, measured, and from the man, the imprecision suggests soft/t the mind is possive; the blue is presented to it, and will not be refuned. As to the comparative amounts, why singlith but little to the general effect, beyond a critical questilly the mixed is incapable of contribuing, even if the sys wave capable of correcting as bless of extraction. To the homosum judgment then restricted, the question which divides the earth from the amounts at his prasent elevation, instanced in a 1's comprehensible, in four zero effective than the utmost extent of infinity to which his vey could practice, where the dated of each repulsable. Not from the reasons here desirable shows the properties, where the dated of each repulsable. Not from the reasons here desirable shows provide the properties, where the dated of each repulsable so. We found that the provides a state of the contribution of the relative shows the contribution of the relative between the relative between the relative between the relative the relative between the relative between

A striking illustration of the influence of nature, in determining the mind to admit the full frew of these impressions, is alsolated in the contemplation of a solid body in the cost of fulling from the cut of fulling from the cut of fulling from the cut of their great of the cut of their great of the cut of their great in the cut of their great in the cut of their great in the cut of the cut

Of these phonomena by which the fall of a body from the balloon is attended, only two require comment; the apparent retardation of its progress, following upon so rapid a commencement; and the length of time which, in despite of the cuward course of the balloon, it continues to be discernible in the same direction. The former of these is an impression analogous to that by which the ascent of the balloon itself, is linive, is accompanied, and of which an explanation has already been given. It is nanecessary to do more here than to remind the reader that the effect upon the ave is precisely the same, whether the spectator be himself removed from the vicinity of the object, so in the former instance, or the object be removed from the eye of the spectator, as in that at present under consideration; the impression of unusual rapidity, displayed in the first fall of the body from the car, being, no doubt, frequently enhanced by the occurrence, at the same time, of a similar motion in a contrary direction on the part of the balloon from which it is dismissed. The other phenomenon referred to-namely, the long-continued presence of the falling boly in the same direction, notwithstanding the ouward progress of the balloon-is founded upon such very simple rules that, to the scientific reader, no explanation is requisite. For the advantage of others, however, it may be as well to observe that, by the immutable laws of matter, motion once communicated to an inanimate body must ever continue to influence its progress in the original direction conferred upon it, until it has encountered some other substance to which to impart it. Improved, therefore, with the motion of the balloon at the time, everything that quits the car without a special impulse in another direction, must continua perpendicularly beneath it until it reach the earth, or, maybap, encounter in its descent some current of

air proceeding from a different quarter, in the resistance occasioned by which, its original motion becomes

gradually dissipated and destroyed.

In the midst of this immeass vacuity, which, with fields pure, we have vaisly endoavoured to algoit, it is not to be wondered boards a sense of militards, to a degree serve before experienced, from the prodomination character of the feelings with which the aromat is, as it wore, feetildy impelled to regard the sense accord him. Unterly abstracted from all context and commoniates with the habitation workful exvidence under a shipled hype invisible medican, without a single object to interrupt the draws monotony of all about him, nothing can be more perfect than the state of includes in which he is placed; and, as less looks of from he hairy domination que the inmense void that everywhere aurround halm, and regular the eigenvan spot he occupies in its wast endosors, he is driven to acknowledge the force of vere imprecious, and for the first time is half he really, and for data. To the the network of these excessions, an other situation is at all competent. Likes to it, though still for removed from the complete opposite of the collisions of the control of t But the most powerful smillings to the sense of colliside peculiar to the situation of the seremant, is the extracellulary scheme that qualifies the regular of also were absentuar. No words can, in truth, efficiently represent the remarkable conditions of the sides with regular to the absence of const., or energy any just notion of the extract the remarkable conditions of the sides with regular to the constant of the constant

Yet is not the newonted absence of the actual causes of sound the only peculiarity under which the faculty of hearing is exercised in the upper regions of the atmosphere; for perhers, at no time is the attention of the acroeast so forcibly impressed with the singularity of his situation in that respect, as when the natural tranquillity of the surrounding medium is under the temporary infinence of distortunce from artificial causes. The contiguity of solid matter has, in fact, another task to perform than the mere generation of sound, in the modifications to which it is increasantly subjecting it, during every stage of ite continuance. Scarcely has a sound been promalgated in ordinary situations than it is immediately encountered by a thousand obstacles that alter, impede, protract, demoge, and qualify its vibrations, and, by the manner in which they interfere with their simplicity, produce the same effect upon their impressions as the intervention of the obscurating medium, already described, upon the objects of the sight; confusing their outlines, and depriving them of that sharpness of contour and vividness of character which, in fact, may be said to be their natural, or at least their legitimate condition. It is true that of such modifications in ordinary circumstances the car takes no note. Unconscione of the offects of sound in its pure and simple state, it suffers no particular impression from the presence of a condition to which it is habituated, and from which it has never at any time been absolutely free; nor is it until it has been transferred to a citration where these medifications no longer exist, that it becomes aware of their influence, and able to appreciate their absence. Such is the advantage which it enjoys in the balloon, and such the restrictions under which the sense of hearing is exercised in the upper regions of the atmosphere. There-situated apart from all contact or intercourse with the solid world-no sound ever reaches the ear more than once, or continues beyond the natural duration of its own primary vibrations. Deprived in a measure of all those artificial asperities by which it is usually distinguished, its character becomes totally altered, and, like the landscape to which we have before figuratively referred, it strikes meen the senses in all its native nurity, sharply, simply, strongly, and perspicuously delineated. With such qualifications the casual occurrence of sound is empsequently attended with even more mecanism effects than the natural stillness of the surrounding medium, extraordinery as that may be

The various interruption it cominosily reviews from below—the behing of dogs, the leving of calls, the tinking of the shop-boll, the careins of the different interactions of the striker, he saw, the hammer, and the fall, when at a moderate elevation; the slot of the sportness, the relievable permatesion of the falling and other while, the dischage of artillery, and the values of these belood has, at a greater discount of the falling and other while, the dischage of the similar products of the belood has a greater discount of the strike the product effects with which they are made appeared. Of all the sensits hawver, which must be producted or such strike its improves a clusterate, or the products of such strike a strike the product of such strike a strike the hallow, when it has not deloning due are convenient disclosive of gas in the corne of the extreme the hallow, when the set of deloning due are convenient disclosive of gas in the corne of the extreme the hallow, when the set of deloning due are convenient disclosive of gas in the corne of the extreme the hallow, when the set of deloning due are convenient disclosive of gas in the corne of the extreme the hallow, when the set of deloning due are convenient disclosive of gas in the corne of the extreme the hallow, when the set of the strike the articles are the set of the strike of the strike the set of the strike the set of the sillen does, in the upols of which it is instruct, and which is a nature over, the a semingle local, is noticed upologie for feeting problems.—If combine instantly suppress, and the strike the set of the likes does, in the upols of which it is instructed, and which is a nature over, the as a semingle local, is not an and problems.—If combine instantly supplies the seminant of the such as a seminant of the strike the seminant of the strike the such as a seminant of the sillen does, in the upols of which it is instructed.

to bestow upon it an effect and a sentiment which belong to no other sound, and are experienced in no other

To the evaluatement of all those effects, as well, indeed, and those perceivable in the exercise of all these classes as immense elevations, the refrection of the air, well the exequents of the region, so absolute between seasonially contribute; not by increasing the ability of the sections for the conveyance of the impression (for in request of some, and, a physics, of all the sight, such conditions are made excitated to the qualification for some property of some, and, a physics, of all the sight, such conditions are made excitated to the property of the section of th

With the increase of his devention, of course, keep pace all those phosomous which depend for that effect upon the diminished using wife the surrounding stron-place; and, as the accountable was like the highest points ascribed to the collassy course of and advantance, they begin to rehibit, in the altered observator they have assented, proofs of the assertanced internations under which they are experienced. In satellity of this them reduced accountable than in the appearance of the formassent inself. The other red as exceeding the same reduced that the chereal consistency of a time process communition, and allowest to warrant the imposition of an appearance to assenting whose limits are more substantial and clearly. Mr. of process, the forced account from Paris, in which he statistical on accountable with the statistical or accountable with the statistical accountable with the statistical or accountable with the statistical or accountable with the statistical accountable with a statistical reduced the statistical from the surface of the statistical from the surface of the statistical from the surface of the statistical confidence of the statistical confid

In order more properly to comprehend the grounds upon which these alterntiess are chargeable, it is absolutely necessary that some insight should be obtained into the nature of the oppearance of the firmament in general, of which the phenomena is question are morely modifications.

That the aspect which the heaven present whenever circumstances point in to only as modularized view of them, welcar in the heaven completion of the gloving  $\Delta q_t$ , when had livery of single, for the miller should be then some completion of the gloving  $\Delta q_t$  as had livery of single, for the order to traight gray, by which the transitions from the case to the other are invariably desiring-table, in our condition to that effect in any supplement in the load  $q_t$  of the simplement in the supplement in the load  $q_t$  in the supplement in the case of the supplement in the supplemen

That the existing appearance is not, as some have vainly imagined, a general contribution raised by reflection from the surface of the earth, and modified according to the particular predominance of the solar infinence, is

asserting upon which MM. Margat, Garmeira, Robertons, and collers, fin accessors in the trade of serotation, have from time to time considerably improved. For those probassions, however, there is not the allgibrest foundation; one would it be a nather of much difficulty to demonstrate that the balbons they employed (with the discussion of which we are well acquaintied) could not, even if inflated with the purest hydrogen, have supported this simple weights at mech above one-half the elements they would

<sup>•</sup> The greatest altitude to which may bolloon has ever been known to sacred [with the exception of Mesen. Corwell and Glaider's asceptial; in the ecception by M. Gay Lunses in this vergare, and it calculated at seven thousand and affricen Frunch metres, or brestly-two thousand nine hastlend and severable-even fact fore inches above the level of the sex (see p. 117).
I am aware that other aeroscanta key fains to higher honours;

I am award that come acrossom my cannot be supported to the second of th

likewise a contains which with equal circumes we collect, partly from a consistent of the fast before observed, when the when the communication largest to be disorbed by the interposition of classification, the character is quiestion, whatever if may happen to be at the time, entirely disappears in the perions contiguous to the earth, while neither be a quality now intermity in the slightest belancing to perspitely in the slightest behavior and the perions of the contract that in all constricts, under every variation of climate, and through every change of season, the generalized perspitely and the period of the contract of the contract that in all constricts, under every variation of climate, and through every change of season, the generalized period of the contract of t

Nice, has, the appearance of the harveity and is notifier a quality which reides in the substance of the strategolarity visus (the only material devices of whose presents in that direction we as example, not included by the process of refusion from a synthing which exists on this site of the space which it switcones, it is evident that on other very remains by which is no somemon for the tally a reference to the continuous by which it can be second for that by a reference to the continuous that the continuous and material and the continuous that the continuous that the continuous that the continuous that the continuous terms of the material very large of the continuous terms of the material very large of the continuous terms of the material very large of the continuous terms of the conti

It almost seems like intruling upon the especial domains of the Almighty to attempt to tear the voil from the charms of boundless space, and expose the secrets of a condition of which our visual faculties but render to our senses an account as mysterious and imperfect as that which our mental ones with their utmost exertions are able to convey to our understandings. To say that the heavens, or that portion of stage beyond the limits of our atmosphere, which we are wont to honour by such a name, possess a colour, would be, in truth, to employ a missiomer. Space-infinite space-unfilled with matter, must really be devoid of colour; and, excepting in the bodies it contains, must ever present to the eye of him who views it in all its natural majesty, the terrific aspect of a black unfathomable above. To confer the idea of a colour, or permit the rave of hight in any way to vary its appearance, the presence of a transparent medium is absolutely requisite. Near the body of the earth, and of most of those other objects with which astronous has made us acquainted, such a medium obtains in the atmosphere by which they are surrounded; and in the offects of this atmosphere upon the aspect of the black vault behind, lies the only condition that exists to vary the visual presentment of void and infinite space. By the combined exertion of two of its properties this result is accomplished; first, by the diffusion of the white rays of light, whereby the axtreme obscurity of the background is townered into paleness," and in the next place by the occasional interposition of a new colour obtained from the rays of light transmitted through it from above, whereby the original in its subdued intensity becomes at times invested with a colour communical of them both.

To the full force of the firmer influence much is, no death, contributed by the presence and disposition of sixili matter in the implehenhoul of the field of view, by mean of which the alignous princes of the surrounding medium become, as it wave, changed with the superfison rays of light them arrived quarters, tealing sate only to distinct the eye of the precedent, and to endem be prompted, the alone to reduce, by the conjugate size of the light, the natural intensity of whatever object may happen to be expend to it. To what an extent the diffusion of lights a supposed to competent to produce the reculum sarried but, we see clearly evinced in the extraording effects economically by the temperary suspension of its influence. No some he are patterney than the late of the case is a silication in the except the discontinuance of the supply, in sufficial archival from the field of view, or a identical in the exquesty of the medium for its conveyance, than the eye is summitted parallel the change in the measured durbance of the supply, an unguarded not as efficient extensy in the cross-version of a solar explore a summary of the continuation of a solar explore a first of the continuation of a solar explore. When the obscination has readed a sufficient assignified—or still more resultably spent to expend the proceder and the presence of a solar explore, when the obscination has readed a sufficient assignitude—or still more resultably spent to exceeds a change in the attaches the part is in the strategience when is the strategience when the obscination has readed a sufficient assignitude—or still more resultably spent to exceed a reader in the attaches to the a inferential respirated—over all the continuations.

The influence of atmospheric irreduction upon the supert of the wold queet by which it is based one start suggraved by the father of the potential set, the excitational Lemanths di Vinci, and discreasive reversed and adopted by 2K also is liftin, as a potability of the contract of the contract of the contract of the contract variety of experimentae were antibuced to prove that black, when based this early white or reference anodems, always includes to assume a blue or sarree size. The tretch of these detection, howwith, experimental contracts of the contract of the contract of white, experiments of the contract of the contract of the white, experiments of the contract of the contract of the contract white, experiments of the contract of the contract of the white, experiments of the contract of the con

colours in the proposition in which they exist in our light, in stages prey; are of 1 believe that on other redors control stages prey; are of 1 believe that on other redors control to makes shouldness, so makes the propositions of the reason steely if rightle to emptt to must been. To what to stifflent, the falling of their assetudents I rodily larger test, makes insteed it registle desting to an incorred criminal of the redors of the subtraction to a research of the control of the subtraction to avoid the introduction of redown relationed by reflection from the transparent media through which they were centained. change from fine to feul weather; and artificially, and with equal effect, by removing to a distance from the surface of the earth is a balloon, or by proceeding in the other direction to the bottom of a well or vertical shaft, sufficiently deep to afford a complete protection against the infinemence of the circumsablest irradiation.

But the mere diffusion of light, to whatever extent it might be carried, although it might alleviate the intenseness of coleur in any object, could never avail to give it a new one, or make that assume "the front of azure blue," whose legitimate aspect was unmitigated suble. This is a result which requires the intervention of another property in the medium; such a one, for instance, as that alluded to, whereby the rays of light transmitted through it from above, are made to effect a colour suitable to the compound required.\* As the intensity of this colour, as well as that of the black vanit by which it is supported, is a quality subordinate to the influence of atmospheric illumination, whatever tends to the abatement of that illumination, either by the curtailment of the supply, its artificial exclusion from the field of view, the diminution of the capacity of the medium for its conveyance, or the remotion from a neighbourhood where its natural amount is increased by adventitious reflexion, tends likewise to increase the intensity of the sky, and bring out more forcibly the natural obscurity of the othereal scene. Of these latter, the ascent in the balloon is a striking illustration. Diminishing at once the density of the medium, and the amount of its terrestrial irradiation, at every step he recedes from the surface of the earth, the acromant obtains in the darkened aspect of the heavenly erch unerring tokens of his upproach to the nether limits of the veid and infinite gulf that lies beyond him; and, I have doubt, could be but continue his course until he had attained the entward margin of the etmosphere, he would, upon directing his view into the realiss of vacuity, behold an impenetrable abyss of perfect blackness, in which every visible source of light would stand like a disk of solid flame, unaffected by the vicissitudes that, for one-half the period of their revolutions, exclude them from the eye of the terrestrial spectator.

How long before that extreme was attained, the fatter part of this description would have been realled, and the becaveily beloke revorded to the noded eye in head adjulgit, I cannot the upon us to determine: if, however, the observation of the sky (spea which the occurrance of the phenomenon in question entirely depends), were to continue to increase at the name rate we observe it in the actifies reaspe of the aswert (and there is every reason to admit the conclusion). I do not think that the possibility of witnessing such as occurrance in entirely shyould be hopes of the assemnant retrustrous enough to attampt it, and pervised with means correctively showed the hopes of the assemnant retrustrous enough to attampt it, and pervised with means corrections enough the state of the contribution of th

\* With the existence of such a property we were first made acquainted by the researches of Sir Lease Newton; who, having sacertaused that rapours, when about to condense and realesce into drops, first become of such a size as to elicit the blue may of trans mitted light, was induced to attribute the agure colour of the sky to a condition particularly favourable to the exercise of such a property, which, it was presumed, existed only in the remoter regions of the apper sir. The existence of a variour at all times present in the stussphere, a circumstance caucital to the views of Neuton, was, however, a weak point in his theory, which has inslaced subsequent inquire to to look for some more permanent quality in the same quarter agon which to clurge the occurrence of the Accordingly, after a variety of experiments, a Fronch philosopher, M. Bouguer, considered that he had solved the difficulty by referring the separation of the mys in question to a difference in the economic of the different constituents of wher light, whereby the red alone, supposed to be nessessed of superior motive energy, made their way anobstructed to the surface of the earth, while the blue, considered of weaker inspens, mable to advance, remained behind to imbue with their particular colour the remoter strata of the atmospheric fluid by which they had been absorbed. These views of M. Bouguer, sufficiently ingenious considering the then state of the science, the recent catablishment of the tiscery of medalations requires us to interpret after enother form. Admitting the exclusive progress of certain rays, but rejecting the grounds of different memerits by which it was formerly wont to be explained, reference must now be had to another principle, namely,

the thorse of a distribution requires us to independ after another form. Admittent the extinuer progress of cristian ray, both reprinting the grounds of different assumetts by which it was formerly went to be applied, or feel to be another principal, namely, and the explosion of the continuer principal, namely, or arbitrary of the atmosphere, are reflected at an aurie, and would be adapted; refined and management of the continuer of the continu

encountered sufficient consistency to deformine their return. For the benefit of the unlearned, howaver, we may as well elsever that it is mattern nought in the least to the subject in hand which or whether any of the views here proposed be the correct outs. It is enough for as that there is a property of the nature referred to raising in the upper strate of the attemptore; and that is a few containing to the matter than the contract of the c

of which we have sufficient proof in the evidence of our senses Indeed, but that the limits of a note are too restricted for the purpose, it would not be a difficult matter to point out occurrent which do not appear to consist with any of the views here taken of the subject. For instance, I do not see upon which of these grounds one be explained the phenomenon very frequently observable upon occasion of the setting sun) of the complete determination of the blue rays to the quarter directly opposite the seat of that luminary leaving the rest of the heavestly hemisphere comparatively deveal of any such inclination. In all these cases the blue if really ch. tained by the decomposition of solar light in fremsite, must not only have travered one radius of the stracepheric horizon in company with the red, but afterwards exclusively continued its course to the further extremity of the apposite one. Another eigenstance, appareatly incompetible with the foregoing views, is the extraordinary blacense docuterable upon the occasion of a sublen mediction in the atmosphere: were the blue in these cases merely the complement of the red, previously interrupted in its passage, its subsequent intervention should only have restored the whole to its primitive could

tion of a colouries congount.

The grant objection, I be go observe, are by no means intended to things the correctness of the theory of undulations as a system explanatory of the nature and properties of first in general. On the contant, it is spon the assumption of its supercury that we are led to question the accuracy of any views to which its prunciples soom in the subjects dispersion remarkable.

sponding to the peculiar exigences of the occasion. Some indeed there are, who, even without these advantages, pretend to have attained situations in the ordinary exercise of the art, from whence the existence of such a phenomenon could elearly be discerned: I should rather, however, suppose that this assertion was merely an exapprenation of the fact, that at their nament altitude they were able to distinguish the presence of the heavenly bodies sooner than they could have been perceived by persons situated upon the actual surface of the earth; an assertion which in fact amounts to nothing more than what we knew would have been experienced under any circumstances of superior elevation, no matter how slight. With every degree of removal from the plane of the terrestrial horizon, the capacity of the surrounding medium for the diffusion of light becomes diminished, and the contrast in favour of the spectator (which is the only cause of their suppression) being weakened, the stars of course make their appearance at an earlier hour than they would if that contrast had to wait the decline of day to effectuate its abatement. The operation is evidently, therefore, one of comparison, and is as easily put to the test by ascending to the top of a hill as by encroaching upon the limits of the sky in a balloon. If I mistake not, something of the kind is mentioned by the elder Sanssure, in his account of the first ascent of Mont Blane, as having been observed upon the summit of that mountain; an observation which has been repeated in other parts of the globe by all travellers who have ever succeeded in attaining great elevations upon the surface of the earth. That such a result could be produced by an artificial exclusion of the light, as for instance in the bottom of a deep well, or any other excavation of sufficient profundity, was a fact well known to the ancients, who, in Egypt especially, were in the babit of constructing pits on purpose to aid them in their study of the heavenly bodies; many relies of these subterraneous observatories remaining to the present day to bear testimony to the industry and acquirements of those learned Paguns.

In consequence of the increased removal from the vicinity of the earth, the temperature of the surrounding medium has become considerably reduced, and were it not for the absence of all atmospheric motion would, no doubt, be severely manifested to the feelings of the aeronaut. At what particular period of the ascent, this decrease attains a minimum, or indeed whether such a result exists within the range of aeronautical adventure, I am not able with any degree of certainty to state. The solution of the question, which is undoubtedly an interesting one, depends chiefly upon the point to which the calcrific influence of the earth's radiation extends, and is only to be arrived at by a long-continued series of experiments and observations. Of course, the results here, as olsewhere, will be found to vary with the climate, the season of the year, the hoer of the day, and the state of the atmosphere at the time prevailing. In one respect particularly, the latter is capable of exercising a very sensible influence over the thermometrical condition of the upper regions: I mean where clouds to any amount intervene, whereby a large extent of reflecting anriace becomes presented, and a very considerable portion of the heat of the solar rays returned into the body of the atmosphere which lies above. As this is an arrangement of the sky more frequently to be met with in winter than in summer, it follows singularly enough that the effects of a low temperature are much less likely to prove injurious to the aeronant in the exercise of his art, during the more rigorous portions of the year, than those which everywhere else come under the denomination of the milder and more serone.

Considering, therefore, the number and irregularity of these disturbing cases, it will appear perty arbitant than to cards measure of the temperature, and, encoperately, to just proposentation of its effect upon the human frame outbil he afferded that would apply with equal correctness to all the eiementances under which it may be appeared to the enterty of the en

Sepposing, however, the state of the temperature to have been in any instance even twice as low as that above indicated, still there is much reason to question whether at any time the mefrings of those exposed to it can have been no severe as many would fain incline us to believe. Certain allowances ought, no doubt, to be made for the constitutional postularities of different individuals; and much analogisty must always be expected to prevail where personal feelings in the snighest of discussion, and the seems itself the only test to which it can be subjected. But with all these administrate here is still inelficiate evidence in the experience of those who lost naturally and by artificial means in the way of experiments have placed themselves in circumstances of like exposure span the cart, to sutherize a doubt that much inconventence ever did or could accura to the exact, who, in the exercise of his vocation, may have presented to the utmost limits his means in other respects would allow him.

Having now attained the highest piets to which it is our intention at present to preceed, we will passe for an intention to take a current quience at the soft-new pieces per which, for some time back, has been grabulity displaying symptoms of decreming presprisonous, has now suffered some high much the effects of abstance that it is not wishest difficulty that any of its cellumy functions can be disringuished. Set that any obstances appears to have taken places in that virializes of continue which we have before the effects of abstances that it is not wishest difficulty that any of its cellumy factors which we have before observed to be the new-realizing positionity of the intermittial some when vision from the nor of the realization of the contribution of the contribution and themselved from the nor of the families and characteristic, have a disciplater become existed, and the rest or much estranged in their approximents and the contribution that like to the recognision of the presence of which they form to part.

Amid this scene of naiveral disfiguration all preoption of comparaire altitudes is utterly out of the question to the distance from the cyr, and solely submitted to a vertical examination, the whele face of mature, in fact, appears to have undergone a person of general symbiation; the house and the tree, the meantains and the very clouds by which they are capped, have long since here consigned to the one level; all the natural irregularities of its excite completely oblicated, and the character of the most carrierly supersoled by that of the piece.

It has frequently been inquired of ma, whether under sirromatones of such consists obviously any specimen of converties on the electrical in the opportune of the betterath place, and as a kernelog of the real frequency of the terrestrial globs might have substricted us to expect. When, however, we consider the innerses dis-grouported which as however the extend allowers of the cent and the same attitude to which more evided indicates of the cent and the same attitude to which more evided the contract of t

In source to this, the resider may perhaps suggest the well-known photosposes of a ship at non approaching from a distance, and absolves the probabil endours of the parts as entiress of the possibility of delating, under a favourable conjunctions of entermators, contin testimony of the nature which we have here attempted to dispore. The example, however, but no mesons case in pinct it is not the speciety of the sorth that they wit is not case observes, but neverly in glott; and therein can so more be considered as residing the convexity of the sorth that the convexity in question have been observed had not the sort however the contribution of the convexity in question have been observed had not the sorth photospheric contribution.

But even if the conclusion were otherwise, will the cases are by no means endagers, see receil any argument to drawn from the superity of theey with one instance to assertion the expectation of a silicar restrict into the Conceptual of the control of the contro

With all these considerations, lowever, the inseparienced noder will, no doubt, bears with surprise that the real form of the earth, as beloid from the oral of a bullow millionally pleated in the all, is a beshoulty the rearrreness of that which a first view of the case may have benityly inclined him to report. Such, however, is unloubleely the feet. So for them following the count editors by the conformation of the casts, and soliking in payperiors as they receive, the edges of the terrestrial plane stratally assense a context printing into the conformation of the cast conformation

Unsysted as this phonomenon may at first sight appear, it is, nevertheless, but the natural consequence of the laws of refraction setting moder the peculiar circumstances of the case. Divarted from the stringlet course which the eight would at all times passes, were it anothersteed by a medium of refraction, the lines under which the various objects are beheld become gradually inclined appearads, referring the objects themselves to points in their new positions. At distances from the own of the resolutive count to those which they are actually stated.



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ameand diagram, in which the station occupied by the acronant is represented by the small ballow; the direction which the sight would have travelled bad there been no refracting medium by the dotted lines; and that which in consequence it is forced to assume by the plain once. As the distance is not failfield by the refraction, the ration objects upon the terrestrial horizon A B (as there depicted) will,

This will be better understood by a reference to the

in appearance, be transferred to stations equally remote from the eye, and be found occupying a enrva, C D, formed by a close continuation of points in the refracted lines of vision, equidistant from the eye with those which ther represent mon the horizontal surface of the earth.

that it is now time to conclude. Teo long aircady I fear have I detained the young adventurer in the realms of upper air; more especially as this is his first attempt, and he mean no doubt feel anxious to return and quell the fears of his family and friends below. We will therefore pull the valve, and commence our descent,

And let not the reader suppose that in this exemingly simple-plane continctal that for required to the solutions, must of this nest important operation; and that the assessment has nothing to do, when the durings to their exeminal, but no securities, but to pell the valve, and take his chance for the result. It is in the conduct of this peri of the veryong operation by the limit of peri and art of the pericular streams, and appear which his over solvey and that of the companious submately depends. In choosing the critical measure of the discount, and regulating his forces accordingly, such plagment and general calling are necessarily greatly. A certain super, the requestry as considered as the constraint of the discount and general call are necessarily greatly. A certain super, thereparty as a considered considered as the constraint of the discount of the discount of the discount of the contract of the discount of the contract of the discount of the discount of the discount of the contract of the discount o

The exact rate and direction of the machine of the time, and the possible variations in both, to which it may be subjected by the current in twa phapers to consort in raising regions coverable showed; the consensed or relatables is a sea to experience when, in the set of disconsizing, in fewer of governance has constructed in the construction begins to operate; the quantity of gas state that the production of experience when it is not as the construction of the

beyond what is accessary to determine the detect of the ballow. The new availance of danger is, therefore, and the other contents of the contents of the ballow of the detect of the ballow. The perfect convenience and complete for the contents of the ballow of the convenience and complete for the convenience and complete for the designs. The perfect convenience and complete of the perfect convenience and complete for the designs. The perfect convenience and complete for the content of the perfect convenience and complete for the convenience and complete for the convenience and complete for the convenience and content of the perfect for the convenience and conveni

In the next place, the solety of the balloon requires and engages the solicitate of the skilled and product amounts, nor can any diversal the skill do have been aven receptably conducted by which the slightest sight between allowed to accrue to that most important and valuable part of the appearing. This in itself involves a great many considerabless. All places are by no means equally adapted for each purpose. The skill made of such a mixer as will facilitate the attachment of the balloon; it must not be so hard that the graped cannot enably posteries, now slight that knowledge carried, it is must be to tenta in balls; it must not be red band to the contract of the silk would be sure to be been cheened, and contain a melficiency of open, clean award as will forcur the emptying and skilling of the discomerhed machine as soon as its toke has one preferrance.

Last, though not loot, some regord must be held for the towards of the still itself; much care should, therein, be taken to avoid attempting to decome line place where he reque not of such a nature as to safely from the operation; a practice extremely repubushle, not only as being the mass of inflicting serious higher purposes the likewise as tending to bring dispurposent steps the not, trouble to fortune arousstants, and frequently has so all inconvenience to the parties themselves, from having their bulleons existed and retained in compensation for disances, which the reconstant of all this dilit would have readed these to avoid a

All these use combinations which, though entirely overlooked by colliany persons, nevertheless always, over into the exclusions of the accomplished aromats, and require the exercise of no ordinary quicklinds. More experience is by no means ambient for their acquirement; for men may ascend for handwise of times, and like plus persons on the end without the slightest attentings or ingovernment; there must be a power wallows all their in experience in a view, and quickloses to exhausting or insurement; there must be a power value on all that in requisite at a view, and quickloses to exhausting the number produces to exclude a view of the complex of the control of the control

It is not my intention to purson the details of the decent with the same precision with which have treated how of the sentire range of the art. For the mast part they will be found to be markly a constrayed ref the preceding, differing only in the order of their occurrence, and would have warry the moder, already sufficiently no, endealt, without contributing saything farther to his steek either of information or entertainment. The few peculiarities it processes are easily explained. Immediately upon sommercing the detects, a printful imprecion in granulty exprinted on the eart, more or ben acute according to the rate at which that operation happens to

As a poof of what may be done by the extenior of paper skill. It is worth cheering that the latter skills of the Gross parently analyse has dendy acceptable to the latter which for Gross parently analyse has dendy acceptable to be largely acceptable to the same of the state of the state of the state of the same of the state of the same of t

Inflorence by the parting of the child, and enter by the senial fractions of the inter, lift. It is unaccovarie to observe what man have been the force of the wind by which not be poverful effects were produced. But these user-brines covered in papers particularly, and forestable to the measurers of the secondar, bring thickly best forestable to the measurers of the secondar, bring thickly best allowed to the control of th be conducted. I have asid yoursely, because much uncertainty states with regord to the thicking to his impressions, there belong once is when it is near how set recording developed than to charge values, again, far for these restricts, the color of the property of the p

This, so far as I am aware, is the only physical improvision peculiar to the descret; as to the mental costs, I can only say, to speak from up own observation, that regord, intense regreat, at being forced to relimpsh a of olightful a situation, is the only sentiment I have ever found to be an invariable attendant upon the conclusion of the sorial voyage.

But we have now no time aver for the indisplace of those melancholy considerations. The belloms individually oppossible give near. The trees, bedge, made, and clear features of the rarul handrope, which for some nines back have been growing gradually upon the eye, have now research their original distinctions, and appear in quick meccasion, rapilly recolleg in our next. Secural persons are asked now had one holding-logical distinctions, and appear in muta noticulations. In obling, muta a stochalment, booking up at our approach, or harrying from all discretions in the hopes of being present at our descret. At languable that field we have been no long alonging the sporses affectly below us; the grapped present as to reduce the continual properties of the continual properties. One, however, more accession of sheets, the violence of which the cluste substracts considually at such cost, however, more fartish than the rost at has ensures and first the analors in the sull. Residential in the progress, the believe of the continual properties of the properties. The believe of the residence of the continual properties of the properties. The believe mutation and properties in the regular to the continual properties of the properties. The substract is the region and the stands of length secured upons the prince.

In the preceding sketch it will be preceived that I have made an account of the effects of diminished-parsams appear the physical condition of the aeronate, which mass have despited in each glowing terms. But the truth, that were I to speck from any own knowledge, or that of others upon whose saterity? I night venture to refly, and whose experience on this zero is an accordancy or that of others upon whose saterity? I might venture to refly, and other experience on this zero is a set of the contract of th

In the translation to the upper regions of the atmosphere, the human body, we a natural consequence of the distainable design of the medium, becomes subjected to the inflatence of two regions Canagers in among the remotion of pressure, and the distainable designed or question and the remotion of pressure, and the distainable supply of ourgon gase. Now the former of these, takes inferentially a conserved to the control of a most immunicate scharacter, and of the fall, simply, insequently of probability gave filled proposition of the fall relation of the part the fall relation of the part of the interview was contented effectively and the relation of the part the fall relation of the fall relation of the part of the interview was contented.

With regard to the diminished supply of oxygen, however, the case may be different; the material in question has a specific action upon the longs, and in cartain quantities is absolutely requisits to enable them to perform the functions for which they are ordained. When, however, we consider how very small a portion (not more than the five-hundred-and-sixtieth part) of the whole quantity contained is consumed at each respiration.\* and mercover, regard the facility wherewith the organs in question adapt themselves to the changes to which, occasionally to a considerable extent, they are exposed in the ordinary course of life, the great latitude which nature has bestowed upon them in the exercise of functions so essential to the support of animation, we shall perceive ample grounds for the belief that no sensible obstruction ever has or could have been afforded to the aeronant by the impoverishment of the atmospheric medium at any altitude to which he has ever been capable of secending. These observations are of course only intended to be applied to persons in sound health; it is well known to what an extent the perceptions in this quarter become sharpened by constitutional delicacy or local disease. The circumstances under which the secent has been offected are likewise capable of exercising much influence upon the physical condition of the individual, and have no doubt frequently led to the adoption of an opinion favourable to the admission of the sensations in question as natural consequences of existence carried on in a highly attenuated atmosphere. To this cause, in fact, I have no doubt are to be attributed the symptoms, alight as they are, which M. Gay Lussac describes himself as having experienced in his second excursion, when he had reached an elevation of twenty-three thousand foot; the greatest with the exceptions already named attained by man. The only alterations which at this altitude he was able to detect in the exercise of the functions of life, which could in any way be imputed to the rarefaction of the surrounding medium, was a slight increase (amounting altogether to not more than one-third) in the ordinary action of the heart and longs: considering what he may concerning the state of his health at the time, suffering from extreme fatigue, deprived of sleep during the whole of the preceding night, afflicted with a violent headache, and labouring, ne doebt, as might be very reasonably expected, under much anxiety, not only on account of his own personal safety, but for the result of an expedition in which so much was at stake, and from which so much had been anticipated, the only cause of wonder is that the consequences should have been so slight as they were. Indeed I have little doubt that had it been tried, they would have been found to have been fully as great before he quitted tha ground, upon his entering the par of the balloon, as at the excessive elevation whereat he was first induced to observe them.

To those who regard the difficulties experienced in the ascent of high mountains, the painful rensations and distressing symptems to which all have more or less been subjected in the attempt to gain great elevations upon the surface of the earth, these observations and the conclusion to which they naturally conduce, may, no doubt, appear surprising. But the situations referred to are by no means analogous: in the former, a circumstance requires to be taken into account which forms ne part of the phenomena of acrostatic elevation; I allude to the excessive muscular action necessarily developed in the attempt; giving rise to an inordinately increased circulation, and creating an equally increased demand for oxygen gas at the very time when the natural supply, from the miner density of the atmosphere, was constantly becoming lessaned. That this is the real cause of the symptoms in question, no better proof can be offered or required than the fact that all these symptoms entirely disappear the instant the exertiens have been discontinued by which they were occasioned. I can only assume the reader that at an elevation in a balloon of many thousand feet above the summit of Mont Blane, Mr. Green has assured me that not the slightest personal sensation could be detected by him different from what he would have experienced had he been sitting quictly at home in his own study,

As to the inferences which may have been drawn from the consideration of experiments upon individuals by means of an air-pump, they are not a whit more admissible as evidence of the effects of excessive atmospheric elevation than the praceding. The circumstances of the two situations are essentially dissimilar; nor would it be possible by any artificial means to render them etherwise. Either the diministien of pressure is merely local, in which case it is nanocessary to point out the distinction; or if it be general, then does it inevitably implicate elements which de not ontor into the constitution of the experiment conducted in the open air. The consumption of oxygen gas and the evolution of earbonic acid, are both essential results of the exercise of the respiratory

\* From the experiments of Bostock, Menzies, Sir Charles Bell, ; from can-aventicity to one-handeedth disappears in the proceeding; assuming, however, one-eightieth as the mean dissipation per duced in the quantity actively employed, we obtain a result at half a entire inch of express, or one-five-handed-and-sixtisth our of the actual contents of the image communed in the process of

and other physiologists, we learn that the average quantity of air sized in the tenes of a full-room man is about two handred and eighty cubic inches, whereof firty alone, or ene-seventh of the whole, is drawn in and expelled at every ordinary tropination, Of this latter smoont, according to the very careful analyses of Mr. Davy, respiration.

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functions, which would very soon change the nature of any experiment in closed vessels, and subject the patient to consequences from which he would otherwise be free.

Upon the whole review of the case, therefore, I have thought it better to avoid all mention of the results in question, than by their admission upon dibions testimony render myself liable to the charge of having contributed to the percentation of error.



NAUTEL AND PLYING PROS.

## ARGONAUTA GONDOLA.

Madame Power first observed and published an account of (at Messina, 1834) the function of the brachial membranes in maintaining the shell of this animal in its proper relation to the body.

A Report to the British Association, in 1844, savs:-

The fabled effec of the breshist mentiones, as "mail." to waft the argument along the surface of the costs, and that of the attenuated arms, as "cam" extending over the sides of the boat, have afforded a favorite topic for poetic inagery and philosophical analogy during many ages; and the little hypothetical anxigator of Nature's ability has been the object of the disquisition of the naturalist from Aristotle to Curier, and of the song of the poet from Callinachus to Byron.

#### SONG OF THE STARS.

Warx the radiant morn of creation brobe, And the world in the smile of Fried zerelay, And the enury remine of elactrous such beingthy breach; And of each of the property of the state of the same And of so to be so that the same of the same From the raid show by thy privine cume, In the joy of youth, as they darred away Though the wellening waters of space to play. Their after releas in chorus runo, And this was the sough the bright case sung :

Away, away, through the wide, wide sky, The fair blue fields that before us lie: Each sum with the worlds that round us roll, Each planet poisod on her terming role. With her isles of green, and her elevate of white, And her waters that he like fluid light. For the Source of Glory uncovers his face, And the brightness oreflows unbounded space; And we drink, as we go, the luminous tides

In our ruddy sir and our blooming sides; Lo, youder the living splendonts play! Away, on your joyous path, away! Look body though our alittering make at

Look, look, through our glittering ranks afar, Is the infinite azure, star after star, How they brighten and bloom as they swiftly pass!
How the verdure runs o'er each rolling mass,
And the path of the gentle winds is seen,
When the small waves dance, and the years; woods lean.
And see where the brighter day-beams your,

How the rainbows hang in the sunny shower! And the more and the eve, with their yonep of bore Shift o'er the bright planets and shed their down! And 'twist them both, o'er the teening ground, With her shadowy core, the night goes round.

Away, eway!—in our bioseming bowers, In the soft air wrapping these apheres of ours, In the seas and fountains that shine with morn, See, love is broading, and life is born, And breathing myrads are breaking from night, To rejoice, like us, in motion and light.

Glide on in your beauty, ye youthful spheres? To wave the dance that measures the years. Glide on in the glory and glatchess near. To the farthest wall of the firmument, The boundless visible smile of Him, To the visit of whose beave our lamps are dim,

Bayant.

#### THE CONTRASTS.

One is frequently asked, "What are the sensations experienced in a balloon?" In reply to which I will contrast the two voyages described by Mons. Turgan, in his excellent manual, 'The Bright Side First, and then the Dark.' The first is a voyage made in 1850, by Mons. Turgan. At 5,20° x, on 22nd July, he left the Hippodrome at Paris, accompanied by Mossrs. Green and Atkinson, and a Spanish lady, Machame de Laney:

In the thought that we should have rises with the equility of an arrow, and expected a strange motion, and that all objects would run operate into a function encode. What, then, we are purples to find that I did not sower as it. The except find from beneath our fact postetors, corriges, and house diminished in our view, yet level delive actilises sharp and other, as if viewed through a deality-consistent. So, not the variety of the contraction of

Mn Green there out some ballant, and we now to a height of one mits and a half, but were still below the clouds. The plain stretched his imassess either in south the eight, which contraved in preportion to the collegement of the circle; node, rullways, canals, and rivers, all the atteries of terrestrial electricist gradualty extended their residence and better trees. The Selection of the circle; the collegement of the circle which could be the residence of the circle which could be the tree violating, one have a still a family attended to the residence of the circle with the contravent of the circle with the circl

We now entered the clouds, and new scenes attracted us. The sum's rays were reflected anishet these commons masses of rapport, and caused riegular mirages for exceeding the livelisest funcy. A few minutes later, and we behold the most beautiful and thrilling spectated that it is possible for man to contemplate; probling on earth can be compared to the sublime magnificance of this scene; they only who have seen the mowy numnite of the Alps may form an infinitely small idea of it.

Eview and accound us mountains of indostribable whiteness extrategred and solar, and appeared coveded together, like a field whether a permy facing it, them all at enouse the chemical account obscaped, lakes and extramed abstract of variety relative shades and the solar contraction of the solar plants of the solar to the solar contraction of the solar contraction of the solar plants of the solar to the solar contraction of the solar contracti

We were fortunate in passing through the clouds to see a parhelien (a double reflection of the balloon with

primate colors), a raw occurrence even in serial vergues. It was then £50 r.m., and we were all sensible of the reflected bate from the choices. On effective the reductive the reductiv

The dark side is presented in Count Zambeccari's ascent from Bologna, in 1804 :--

A bark of beauty on "the moon's" blue sea, Winning its way among the billowy clouds,

Uncared, unpiloted, moved on; the sky

Was studded thick with stars, which glittering stream'd

An intermittent splendour thro' the heavens.

I turned my glance to earth; the mountain winds

Were sleeping in their caves, and the wild sea,

With its innumerous billows melted down

To one unmoving mass, lay stretch'd beneath

In deep and tranced slumber, giving back

The host above, with all its dazzling sheen,

To Fancy's ken, as the the luminous sky
Had rained down stars upon its breast. Suddenly

The scene grew dim: those living lights rush'd out.—Alaric Watts.

.... Then my spirit sunk! I thought my honour was lost! abausted with fatigue! having esten nothing all day! fever on my lips! despair in my sual! I rose at midnight—without other hope than that my balloon, which had much suffered from wear and tear, would not carry me very far.

Anisotion and General incompanied me. I intended to remain, if you bills, at the same level until it was high, but I can persirved a tackenge to Bil. I still beged to decreal without diagon are billogue, when of a sudden wa new with inconcribate rapidity, and the lamp it was intended should be one from the earth, was artinguished; the inhability of a lenter, becwer; attill andeved us to lock at the heremost. This insupportable cell, together with no food for twenty-four hours, named us to full into a sleep resembling death; Grassetti was affected in the same way; Anderried ofly remained works.

We descorded shorly through third clouds, and when we were below then Andreid beard the reliling of the waves. He thin me this with shim, and so may owe one confirmed the tweet. In intensity wisted a key of ballant, but before I could there it cut the car such in the water. During the first moment of about, we three from an intravense, to clothes, sneary, and all the could lighten the anothing, still we allow if it is, so we cut ways and portions of this car as could be speed, and family there are lamp into the see. Thus lightened, we rose with me in terms are middly, that we could not been such other viole, everly so, were by bardong. I find side, and Grassettik nose bled 3 av we had beer wet to the skin, we were now covered with a coulding of ice. After appending half as how in the opper regions, we desmoded solvey, and fill again into the same. It was them showed at 4.x. The sight was still dark, and the sax temperotons, and we were not it is attaction to make many description. It is sufficiently to the same of the same of the water, with the water weaking error. But hald host being interraced till dava, when we found committee appoint Pasars, about four mind from the road. We thought we should soon arrive there, when a had with aging corrival on out to see. The few finding-both sear and sway from us in advan; but a smuch at a distance recognized our globe we a hallow, and cann alonguish. The saliest three are possible which means we reached the dark perfectly advanced. Our searchest the highwated parts made in the saliest process of the saliest three the saliest process of the saliest three three

This distressing adventure occurred on the 8th of October, 1804, and was caused by rank promise to the ouger spectators at Bologna to accerd as soon as the balloon was filled, which was not accomplished till midnight. These toils and difficulties did not, however, deter the noble Count Zamleccari from continuing his experiments, till ho lost his life in a Montgoffice, in the year 1812.

# THE AIR VOYAGE.-A VISION.

Yn have benal of spirits that sail the six. Like brief stat dont of ret momentains bare, Upborne with pinions of beauty on, Whom the farewell light of day is gone, And they gladly near to the blass wavy. As to such the star's young travelling my : Till the arch of night, In trendlingly begint.

As if meteors shot on their upward flight.

Ye have heard of spirits that sail eway

To realms that glisten with endless day,—
In order the clouds success lift their giant-forms,
In other for disn march to the hand of storms;
Where the ocean of other heaves around,
And sileson and dew sione are found?
Where life is still,
By a boundless will,

As a subbath around some echoless hill!

Me howcout around more exponent cut:

Methought I was borne through the measureless fields,
Wiles the eliver most and the count wheels.

With a footwass thrilling of joy I went,
And to tide of list through my beart was sent,
An though a new foundate had burst control,
And hole its afferment ofer my pulses roll;

And a shallop fruit, With a sharlowy sail, Hurried me on with a singing gale.

It went through my beain, this deep delight, With a kindling sense of sound and sight; And it seemed, as I rose, that the far blue air Caught a bue of glory more righty mee Than was ever revealed to earthly eyes,—
The cold, cold lustre of opportunes skies!
And still my back wept
Through the firmament,
As a thing to the walls of the universe sent.

When the sun rolled up from the burning sea, Like a car of flame from immensity, I felt his beams quiver along my frame, When first o'er the clouds and stars they came;

When first o'er the clouds and start they came; And the light dropping orbs I had alumbered among, Their dim dewy eyes o'er coastion hung, As each beautiful ray Sunk andly away.

To the isser home of the high-blue day!

Then I sailed far off to the thursdering clouds,
That isomed on the air like spirits in shrouds,
My vessel, sends on their fleery pillow,
Neemed a shadowy back on a drawny billow;

Pectical a Standowy heart on a drawny billow; I And I floated through some of visioned things, White far below, "Mid the lightning's glow, I beard the dull sounds of the tempest go.

Then storm-clouds crossed my glowing track, And lasached me on through the horrying rack, Till a new crastics second to rise, In beauty all over the opening skies; And the spirits that passed on the wings of night, As they took their farewill fastlery flight,

Poured melody out,
Like the far-off shout

Of mosts that dies on its airy route!

G. MELLEN.

The following (from ' Good Words') is Mr. Glaisher's graphic account of his journey in a balloon, six miles high:— When it is intended to accend five or six miles high, the balloon is but little more than on-ball full; because gae expands to double its bulk at three and three-parters miles high, and to three times its bulk at five a miles; to fill the balloon before sterring wend therefore be to waste gas, and possibly annoy the occupants of the care by its occupant from expansion at the neck of the balloon.

The processes of aspansion and contraction are constantly going on, and varies with every variation in the highly of the blinks. On passing from a colory state of the 3 yet on clear one, it is necessary to go through the classic, during which time for cordings and the ballows become bedward with noisence, so increasing its load; a but to reckaling take bright annalism, the expension, from the man shainge on the ballows, nears it to zie republic; the or best-large take bright annalism, the expension, from the man shainge on the ballows, means it to zie republic; the state into close, the gas becomes contracted by those of past, and the ballows every frontin boords maintain and so increases in body, the causes containing to make the ballow deveed with great replacement.

Moreover, this continual variation in the expansion or contraction of the gas causes perpetual changes in the shape and course of the balloon, and so accessitates the constant attention, skill, and judgment of the acromant.

In the case of the extreme high ascents, the operations were performed where no eye but mine could witness

At the same time, a journey through the sir, reaching to the height of five or six unles, is of so were as occurrence, the pointies so novel, the phenomens which present themselves no peculiar, latt nothing short of parsonal experience could give a correct knowledge of them, that I propose to give a descriptive account of a jarrary through the sir, themsign the superiences of the several secretal have made accurate targeties.

#### BEFORE LEAVING THE EARTH.

Imagine the balleon somewhat more than half inflated, eager for flight, with only one link connecting it with the earth, vis. a rope attached to an instrument called a liberating iron or catch.

When all the ballast, instruments, and everything also are placed in the car, with the graqued attached suttisis, so as to be realily detched, and these ansant to 4000 penush, the ballons is brought to as is or and balance, so that the abilition of twenty pounds would prevent it from rising, but if removed would give it the required seconding never.

When all is ready, Mr. Coverell, with his head spon the earth, looks up at the sky, and is apparently starting at senancy, but he is not. If the aky he partially doulty, he suches in this is influency between the cloud that has passed and that which is coming, so that he may here a clear sky, and at loost we the cent he beauth, and a loost see the cent he hearth, and always procede, and that which follows will always procede, not that which follows will always procede, and that which follows will always the second that which follows will always the second that which follows will always the second that which follows the second that which is the second that

### TRE DEPARTURE.

When the was aliases, the wind hills, and the balloes stands prosilly error; the favourable moment survive; the earth is palled, and we are free. We are less, that call any, we are in profunding proper, to matter bow violant severe the wind may be, no matter how against the balloon may have been energing to an fire, now on this size, now on that, with adoles and violate statins, solvaint and large all the effects of the many individuals we were strengthing to be fit; all spiciolon in a moment crosses, and we are in perfect stillness, without any some of montion whatever, and the continues throughout our error fire fight.

Once away, we are both immediately at work; we have but little time for graceful acknowledgments to cheering friends. Mr. Corwell proceeds to put the are in order, and accordingly looks to it, to his balloon, and to the course we are taking; and I must got my instruments in order. Without delay, therefore, at once place them in their intuntions, adjust them, and take a reading as soon as possible.

In a few minutes we are from 1000 to 2000 feet high; In: Convell books intently appearing to see how the bugs folds of the balleon fill into the netting. If we have started from a town, its busy hum uttracts ear attention, and a glasso shows us the many uptured faces in every street, and the town livelf, which looks like an engineer's model in motion; and the now that fading others of our assembled friends next attention, and mother places shows us the quickly disminising forms of the chicke we or recently left.

#### REACTING THE CLOCKS.

On approaching the chole, Mr. Curvell recommonds as to take a flow-vell perp at the early, and, as I do this, the clouder rowers as, first in a light genes of supers, and then in their delity relations, where I canning their intervars, note the temperature of the dew-point particularly. Shortly it becomes lighter, the light generally increasing 101 in its necessive Ja a field of light, at first orbifold, the baseling, and we preadurely increasing 101 in its necessity of a field of light, at first orbifold, the baseling, and we pread the contract of the second of the second of the light of the

#### ABOVE THE CLOTES.

When approaching the height of three miles, Mr. Curwell directs my attention to the fact, that the balloon and the gas is issuing from the antisy-raine. He then directs no particult on the fit and proportiess of the netting. I find the gay which was before closely and opaque, is clear and transparent, so that I can look right up the balloos, and see the meshes of the network showing through it; the upper valve, with its springs and line, reching to the are, and the geometrical form of the halloon betalf. Nor is this mile examination.

I have already said, that is possing through the cloud the netting would gather meisture, segmenting the weight of the balloon; if this should not all have responsed, the network would have become frome, and be as wire-rope; so that, if the diamond abupe of the netting when under tension, and the form of the erews of the balloon he not symmetrical, the weight might not be equally distributed, and there would be danger of it cutting the balloon. A sense of security, therefore, follows see the accumisation.

## Tenz Muzz Ilros.

A stream of gas now continually insens from the next, which is very capcious, bring fully two spaces foot in next, which is shown the open and enter into in 1 mM. Carell, whose up we have continually writing the haldons, pass his flaggers over the wine-line, as if in nollinear to pull the cost. I hak inquiringly at him. It mays, I have backed to upon the large upper wires, and enrolliny applies with p. "The tension," he was, "on the haldon is not greater than it would have in a warm straum of air with askey; but now that may, "on the haldon is not greater than it would have in a warm straum of air with askey; but now that from the haldon." In the cost that the cost is the haldon in the haldon, in the world have not no energy at the app, and that age of the haldons."

## FOUR MILES HIGH.

We are now for beyond the reach of all ordinary sounds from the earth. A see of clouds is below us, so deans that it is difficult to personale ourselves that we have passed through them. Up to this time, little or no inconvenience is neat with; but on passing above four miles, much personal disconfict is experienced: respiration becomes difficult; the besting of the heart at times is entitle; the hands and lips becomes blue, and set higher elevations the few sides, and it requires the correls of a term will to make and record observations.

## Five Mues Hon,

Before getting to our highest point, Mr. Coxwell counts the number of his sand-bags, sod calculates how much higher we can go, with respect to the reserve of ballast necessary to regulate the descent,

Then I feel a ribration in the our, and, on terming round, see Mr. Coxwell in the act of lowering down the giapane; then looking up of the balloon; then comming the horizon, and weighing apparently in his mind some distant clouds, through which we are likely to peas in going down.

A glance suffices to show that his mind is made up how much higher it is prudent to rise, and how much ballast it is expedient to preserve.

#### SIX MIRES HIGH.

The balloon is now linguing, as it were, under the deep blew vanit of space, heritating whether to mount higher, or begin its descent without further varning. We now held constitution, and then around, giving ident scope to those excitons of the scal which are naturally called forth by such a wide-spread range of crusion. Our course is now about to change, but here I interpose with "No, no; stop! not yot; let us remain so long, that the instruments are certain so take up their true readings, so that no doubt can rest upon the observations here. When I am satisfied, I will say, Pale.

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## THE HOMEST POINT.

Then, in sitence, for how we respire with difficulty, and talk but little; in the centre of this immures space, in olivable, without a single object in interrupt the view for 200 miles or more all mond; abstracted more earth; upshall by an invisible nedium; our months as dry we cannot eat; a white ans halow us; so far below, we see few, if any, irregularistics. I would the instrument, has frechtly impelled again, had remote the center of this immense vacuity, whose bounding line is 1500 miles, including an area of 130,000 entere this content of the center of this immense vacuity, whose bounding line is 1500 miles, including an area of 130,000 entere this content of the center of this immense vacuity, whose bounding line is 1500 miles, including an area of 130,000

## BRIDGING OF THE DOCUME.

When I find no further changes are proceeding. I wave my hard and say, "Pull." A deep resonant sound is heard overhand; a second pull in followed by a necond report that rings as with dutil incompanisated shown the very sides of the balloon. It is the working of the valve which causes a loud bouning noise, as from a soundingbount, as the outrins faces the shattest back.

Bet this send in that solitory region, and a silence so profound that so ellence on certic is equal to it, a form-tile somal meeting the ear from none, from wheneve we mustly as no har none, at riches or feetility. It is, however, one sound only; then in an emeritantic, so reference, one that the profound on the soliton of the soliton

## tixe on Two Miles Down.

We have descended a mile or more, and our feelings improve with the increase of air and warmth. But situate reigns supreme. Mr. Conwell turns his back upon me, economing the distant cloudscape, speculating as to whon and where we shall break through, and each sight of the earth.

## APPROACHING THE CLICTIS FROM ABOVE.

On searing the clouds we observe the counterpart of our own balloon referred upon them, at first small in size, noncentrily increasing. This spectral ballow is character is look upon, and presents infert finest regard of apects, which are magnified or diminished by the relative distance of our balloon from the dends, and by its position in relation to the run, which produces the shalow. At tailing it is deep down, almost understand in it is more grantly defined towards evening, when the galden and ruby time of the declining one impart a groycous coloning to declinated. Vee may then so the spectra balloon magnified upon the distant should-tay strength with three beautiful circles of raishow time. Language falls satisfy to describe these illuminated photographs, which service us with matchine truthfulteness and cloid to decoration.

#### DIPPING INTO THE CLOUDS.

Just before we enter the clouds, Mr. Cexwell having mode all preparations for the descent, strictly onjoins me be ready to put up the instruments, lest, when we less the powerful rays of the wan, and absorb the moisture of the lower clouds, we should approach the earth with toe great rapidity.

We now next the confines of the closels, see the spectral ballion approaching we notify as large as our own, and just then dip stiftly into the thicknets of them. We experience a decided chill, and bear the resulting of the collapsing hallon, which is now but one-third full; but cannot soo it, so obsess in the mass of vapour; one, two, three, four, or more minutes post, and we are still in the cloud; how thick it must be, considering the rapidity of the docent?

#### BRIOW THE CLOSES.

Presently we pass below, and the earth is visible. There is a high real intersecting green pastures; a piece of water like polished steel. As open country lies before us; a shoot comes up and namemes that we are seen, and all goes well, save the rapidity of the element, camed by the thirt clouds through which we have just passed, shatting is not from the wair rays, and louding as with ministers. Mr. Cowwell consistence this by means of the

ballast, and streams out one bag, which appears to fly up instead of falling down; now another, and another he easts forth, but still it goes up, till the wayward belloon is reduced within the bounds of moderation. Mr. Cexwell exultingly exclaims, " I have it not under perfect control, with sand enough, and to spare."

Glad to find the balloon checked, with the prospect of an easy descent, I read the several instruments as quickly as I can, noticing at the same time the landscape below, charming in its constant variation, rich with its mounds of green foliage, fields of various shades of green, intersected by roads, rivers, rivulots, &c.; and all this is seen with a distinctness superior to that on the earth; the line of sight is through a purer and less dense medium, everything seems clearer, though smaller. At the height of four miles over llimingham, both Mr. Coxwell and myself distinguished readily the New Street station, and the several streets in the town, with the naked eye. After descending slowly for a little time, Mr. Coxwell selects a spot for our descent, distant then two or three miles. The current near the earth, which is often stronger than the upper, wafts no merrily in that direction.

#### NEARING THE EARING

We are but a few hundred feet from the earth, when Mr. Coxwell requests me to put up the instruments, and he will keep on that level till I am ready. He throws out a little more sand, and I pack up the instruments in their wadded cases. Mr. Coxwell's eye is on the balloon-the course it is taking with respect to the inclination of its descent on the spot where he has chosen to land. Shortly he calls out, "Are you all right?" "All right," I respond. "Look out, then, and hold fast by the ropes; the grappel will stop as in the large meadow, with the hedge-row in front. AT ASSTUR

Sure enough the grapuel catches in the hedge, and once again we are connected with the earth by one link. The valve-line is drawn, and a little gas is allowed to escape. The sheep, which have been watching the descending balloon, huddle together and run away; and the cattle, becoming very frightened, place their tails horizontal, and wildly scamper off in all directions.

Villagers break through the hedges on all sides, and we are soon surrounded by on agricultural crowd, some of whom take held of the rope attached to the grappel, and, as directed, poll us down, or hold it whilst we float to the centre of a field. The valva is again opened, gas is allowed to escape by degrees, nothing is allowed to be touched till the reduced buoyancy of the balloon permits the removal of the instruments. The car is gradually lightened, till finally we step out, when a group of friends from among the gentry draw up near us; and although some few may question whether we belong to this planet, or are just imported from another, all doubt on the subject is soon set at rest, and we are greated with a hearty welcome from all when we tell our story, --how that we have travelled the realms of space, not for the purposes of pleasure, not from metives of curiosity, but for the advancement of science and the good of mankind.



WILD DUTCH AND TORTOGO.

I am eaglet born, and can drink in The sunlight when the blinking owls to darkling. Duzzied and blinded by the day. MITYCED.

3 F 9

## CHAPTER XL

#### CARICATURE, AND THE RIDICULE THIS SCIENCE HAS UNDERGONE.

"Aristophanes only gives expression to public hatred and so public score, in ridicaling and misrepresenting the physical inquirers of his day,—nero and to compy themselves in "Waiking on air, and contemplating the stor,"

Laws. Life of Aristotle

WHEN A MAY LADORS HE IS NOT TERT MERRY, BUT THET PHOUD, BORRES - CIRANO DE BERGELAC - "MARING DE OF

THE MORNING MIST" - THE BEAUTIES OF THE LUNAR COUNTRY - A SOLAR BEING - A LUNAR ARREST - RETURNS TO ITALT - DEAY SWIFT - PERASUS IN HARMER, SCHELLES - A PLYING TISIT, ALBERT SHIFF - PLEASURE TRIPS FOR THE PROPER, ALBERT SHITE - "CEOTORIES IN THE ARE" - "THE PLANET-LARTH" - PALLOONICHIES - NO RUFFLING OF BUTTERFLIES' WINGS TO PUT YOUR FAXOUS TO PLICET — "TWELVE TIMES THE REIGHT OF ST. PAUL'S" -- THE EARTH "WEST DOWN" -- PORSON'S SKULL -- A FRIEND'S CHAMBERS ON THE SECOND FLOOR -- "HALFWAY DOWN" -- DOES BISWELL SAT JOHNSON WAS EVEN IN A BALLOON - THE PENNY DOTATOR - THE "ACHINGE" OF BALLOONING -A BROBLANDER'S KNOWLEDGE OF KNEE-BUYKLES — RADSING THE WIXD — " BARBAGE'S HAVINNE" — WATERLOO RRIDGE — £00,000 — THE STATUS OF GEORGE HIL -- SATURAL, MORAL, AND POLITICAL PHILOSOPHY -- IFS -- "MULIUS CHER AND THE TOWER OF LONDOR "-"GLORIOUS VICTORY "-THE JEWIL OFFICE -BALL OF THE GOLDSMITHS' COMPANY -NATIONAL GALLERY AND NEWGATE—180, 180, 180 -- QUARTE AND SILICA -- £0,000,000 -- "BUT LONDON SHOWED ANOTHER SIGHT " -- DRAWN IN LINES OF THEE -- A BINT FOR SOMEROOT -- CAMPS AND CARDNETS DIVISIONS -- THE EAGLE. AND CHILD - PLAT AS A PANCARR - A RAVERIE - HISTRID NOMETER ONE DRUGER ABOVE THE MEDIOCRITY POINT - THE PETFOTER — THE PUBLIC IS THE MAINSTAY — EIGAE FOE — BOTTEROAN — HANS FFAALL — THE BUSIONASTER — THE ASTRONOMICAL COLLOR—" THE MOON'S ACTUAL DISTANCE FROM THE EASTS "....... TO BE REACHED IN 161 DAYS AT THE RAFE OF SIXTY MILES AN HOUR -- LIFE SUSTAINED IN A VACUUM -- THE CAY EVEN THE PROBLEM WITH AN AIR OF SONCHALANCE -- " SHOULD THE KITTENS SUFFER IN AN EUFAL PAGESE AS THEIR MOTHER?" -- " THE SHORES OF THE ATLANTIC OCEAN " -- " PUN MARES A HEARTY MEAL " -- 132,000 FEET, OR TWENTY-FIVE MILES ABOVE THE STA -- THE ME OF THE NORTH POLE ... AS END IN A STRAIGHT LINE FROM THE FOLE ... 7254 MILES ABOVE - DIMINUTION OF THE BARTH'S APPARENT DIAMETER—"THE STACT PLANE OF THE LUXAR ELLIPSE"—THE "DOUBLEVEDSEMENT"—"NO THE TO BE LOST IN EXCHENING THE MACHINE" — "THE EASTH APPEARS LIKE A COPPER SHIELD, BELTED WITH TROPICAL AND EQUATORIAL 20YES "-- " THE DUTCH PROFESSOR DROPS HIS PIPE."

"ALL men (says Dunley) have, more or less, a propensity to satire and ridicule. This tendency has its origin in self-low, which naturally leads us to indulge in a belief dorn orw superiority over the rest of our species. It is in astire and ridicule that this feeling receives its most frequent graditionities; and, splite of the objections of Beattie, nothing can, in many instances, be more just than the reflection of Addison on the well-known theory of Hobbes, that when a man huggles be is not very merry, but very prood,"

Could a better laughingstock be found than aerostation, in which the failures are so obvious? One of the first instances we meet with is a masterpiece of ridicale by Cyanus de Bergerac, who was born in Perigord in 1620, of whose amoning works,—entitled \*Histoire Consigne dos Estate et Empire de la Louri; also \*Los Estate et Empire du Soled;—Dumlop, in his \*Histoire p Feilmi," gives this concise abstraction.

I shall give some account of the first and best of these works, as it is, with much probability, supposed to have sinteneced Swift in his adoption of the same method of writing, and has acquired a high reputation among the compositions of this description. Both the works of Cyrmos were perdaments, and are in some parts multired. The first of them, "Do is lands," was published by Mones, de Brits, who tells us, in his principe, that the father of Cyrmos, "evolut has been victure Gentillomma some indifferent poer l'eclusation de son enhants." But also informs us, that the years gauss attend in out do array, and becomes the sont fentosses destilled the hope, laveing bonds are than a bounded times, ribbant son of this renormative laveing bons in his own quarral. He was wounded at the slape of Array for the state of the state of

The notice of writing an excess of an imaginary convincion to the more, seems partly to have been negected by the circumstance of the hums worlds breagle become an object of curiority asome the highligarders of the law, in central decline the size of the size of the convention of the peripatrics, that the more and not be abilitable world, on account of its methospatch starts, (filter (Philosphe Magnet, \* a) said 19), Higary Levy and Prantice Particles explained at great height the appearance on which they founded an opposite system. While Herelin, in explained at great height the appearance on which they founded an opposite system. While Herelin, in the contraction of t

Hence Cymae conceived the intention of representing, in a humanous point of view, those chimmen which some of the contemporaries but for green'd practed. To this is pointed the plan of rideniling the polentary the archael eliquatriess of the age, and that deformes to authority which was so long the bane of sciences. The notion of converging this arter in the form of a minguiny accordant to the moon, was probably angoested by the Spaniah work of Dentinico Goonale, of which a French translation was subsequently published, under this of 1-Homano data is Lame, on le Verger Chimeripe fair at 19 modes de la Lane, newlinder missed contributions of the contribution of the contribution

Experie begins the relation of the veyage to the most by an account of a conversation which led him to mentions out that immany. His extensignation ended in planning one method to go thirty and, accordingly, having filled some plaint with does be fixed there round his person, so that the best of the son, by attenting the deer, niced in firm one art. He glighted in Cauda, and gives us seen astrometrical conversation has there sholl be a second or the size of the conversation and the relation of the conversation and the relation of the conversation and the second of the distribution of the conversation in the very clearly describedly, or its detail the circumstances which at length remercial to dig that consequent for the distribution of the conversation of



is much less happy than that of Dominico Gonnales, who feigns that he had been drawn to the moon by ganzars birds of passage which winter in that luminary.

After a long secont, Cyrono finds bisself between two moon, of which our earth was the largest, and knight he readest subject or activity at the mon, towards which his feet that turn. This does not happen sit like his results and the size of a second-order property of the common size of the contract of the size of the size of the size of the contract of the size o

At the extraces into the mon, a kine overs in the work, of which there are several instances in the course of it, some of which perhaps, were owing to the author limited where a difficulty coursed as easily to be automated, and others publishy to the citize when a passage presented hard which was too free or indictions, the surprise of the course of

After walking half a league in a forest of jessamine and myrtla, Bergerac espies a beautiful and majestic youth reposing in the shade. With this personage, who had once been an inhabitant of our world, he enters into a convenation, of which we have only fragments. He is soon afterwards less fortunate, in meeting with the aborigines of the country, who are described as huge maked men, twelve cubits high, walking on all fours. By those he is considered as a little mometer, and he is consigned to a mountchank, to be exhibited, like Gulliver, as e show -- "Ce Bastelenr me porta à son logis, où il m'instruisit à faire le Godenot, à passer les culhutes, à figurer des grinaces : et les après dinées il faisoit prendre à la porte un certain prix de ceux qui me vouloient voir. Mais le ciol fechy de mes douleurs, ot fasché do voir prophaner le Temple de son maître, voulut qu'un jour commo J'estois attaché en bout d'une corde, avec laquelle le Charlatan mo faisoit sauter pour divertir le monde, J'entendis la voix d'un homme qui me demanda en Gree qui J'estois. Je fus bien estonné d'enteudre parler en ce pais-là compase en notre monde. Il m'interroges quelque temps; Je luy repondis, et luy contay on suito généralement toute l'entreprise et la euceès de mon voyage ; il me consola, et Je me souviens qu'il me dit : Hé hien, mon fils, vous portez cufin la peino des foiblesses de vostre monde. Il y a du vulgaire icy comme là qui ne pont souffrir la pensée des choses où il n'est point accoustumé. Mais scaches qu'on ne vous traitto qu'à la pareille; et que si quelqu'un do cette terre avoit monté dans la vostre, avec la hardiesse de se dira homme, vos sçavans le feroient estenffer commo un monstre. Il me promit en suite qu'il advertiroit la Cour de mon desastre."

This friendly personage allo discharde a terrestrial and have religit by informs Bregore that originally has held been a matrix of the mrs, which, long convicted with hisblanks, consistently are not evidence for individuality, consistently are not evidence to the mighboring plants. He had, it mean, been comminished to our earth, and is his youth had been known in Greene as the desired Nesteries. It leasn had had district binosis in britten, but had tellergy between a lensur to interestrial residence, for which he assigns various resease.—"Cost que les homesse year stements de la religion de la hadre de la commission de la religion de la hadre de la commission de la religion de la hadre en expension de la religion de la hadre en grant, que all religion de la hadre en grant, que all religion de la hadre en grant, que de la religion de la hadre en grant, que de la religion de la hadre en grant, que del religion de la hadre en grant, que de la religion de la hadre en grant, que de la religion de la hadre en grant, que del religion de la hadre en grant, que de la religion de la hadre en grant, que de la religion de la hadre en grant, que de la religion de la reli

With this solar being, Bergum enters also philosophical enverantion, and several very solalize discussions, such as for featured pinterspeed by his fixed the exhibite. — He so solicit the seed discuss, quant on Birticlear experiency taps he chambels commonpulat a consuper do non jurgo, or gills intendedicat point, et qu'ils propulent part au grappement son artificità. Il a certal sigh las bids, il lever na corde por sen dain sustre jusque, à en qua les spectateurs évant sonds de rime et d'assencer que J'avois presque antant d'oujeit que las bestes de lour pais, lis so mitrerate thèmes olices seg<sup>2</sup>.

The chief inconvenience felt by Cymno, during the first period of his lunar residence, was the wast of provisions, for the inhabitants of the soon live by the obser of savonry visuds; a mode of subsistence also attributed to them in the 'True History of Locian,' which orinces our author's initiation of the works of the Greeian

satirist. Cyrano, however, at last succeeds in making them understand, that some ing more sobstantial than the mere steam or exhalations of feasts was necessary for his subsistence.

At length Cyrano was conducted to court by the friendly demon, where, after much reasoning, it was coneladed that he was the female of the queen's little animal, who, in consequence was ordered to be introduced to him. Accordingly, in the midst of a procession of monkeys in full dress, a little man arrived. "Il m'aborda," saye Bergerac, "par un Crisdo de souestra surced; Ja luy riposté sa reverence à peu pres en mesmes termes." This gentleman was Dominico Gonzales, the Castilian, who had travelled thither with the Ganzars; and this circumstance, by the way, is a proof that the work of Gonzales was the prototype of that of Cyrano, as his was evidently of 'Gullivor's Voyage to Brobdignag.' Dominico had immediately on his arrival been classed in the category of monkeys, as he happened to be elethed in the Spunish mode, which the inhabitants of the moon had fixed on for the fashionable attire of their moukeys as the most ridiculous, which, after long meditation, they had found it possible to dovise. Cyrano being considered by the lunar sugest as the female of the same class of monkeys of which Dominico was the male, they were confined together, and have long and pretty tiresome discourses concorning elamentary principles, the possibility of a vacuum, and other investigations, which were fashionable subjects of discussion among philosophical inquirers in the days of Bergerse. "Voilà," says be, "les choses à pen près dont nons amusions le temps: car ce petit Espagnol avoit l'esprit joly. Nostre entretien toute fois n'estoit que la unit, à cause que depuis six heures du matin jusques en soir, la grande foule du monde qui nous venoit contemplor à nostre logis nous eust destouroé; Car quelques-uns pous jettoient des pierres, d'autres des noix, d'autres de l'herbe : Il n'estoit bruit que des besten du Roy, en nous servoit tous les jours à manger à nes heures, et le Roy et la roius prenoicut eux-mesmes assex souveut la peine de me tastor lo ventre pour connoistre si Je n'emplissois point, car ils bruloient d'une envie extraordinaire d'avoir de la race de ces petits animaux. Je ne sçais si ce fut pour avoir esté plus attentif que mon masle a leurs simagrées et à leurs tons, mais J'appris plustest que luy à entendre leur langue, et à l'escorcher un neu."

The circumstance of Cyrans sequency some knowledge of the language of the country, instead of being Arounde to this, exped his to increasing one and presention, as some free-thinker being to tablige that be ware ordered with reason. This was most ferrisable to the some free-thinker being to tablige that be were ordered with reason. This was most ferrisable upon one of the contraction of the

But the principal argument against the rule-calling of Cyrano and his such, and on which the hoar agay expectically piqued themsives, was, that there emissing honoses the for Solikos, which the agas of our earth, in the first discussions against quadrupole, rightly comisior as a ploting of immentally: "Veyus us post cuts cals," consider the large principal configuration of the Cyrano and the Segment's continued the large principal configuration of the Cyrano and the Segment's continued for the correct deverse for City. Cort Latherto or Dies to a mich to state or house, again to circle due to sort, or exten postures seplicated intensity of the cort, or exten postures seplicated intensity of the cort, or exten postures seplicated intensity of the cort. The cort of t

The result of the philosophical conference concerning Cyrmic was, that he must be a hid—a discovery on which the engage regard planed themselves be was accordingly endecoded in a cage, and instructed to the queries forder, who engloyed binned! in teaching his clarge as we do limete. Under this perceiv amplion, the progress forders was employed binned? in teaching his clarge as we do limete. Under this perceiv amplion, the progress of Cyrman was such that the disputes concerning his reliability were received, and the consequence was, that these agrees the defended the ercholor risk of the queries, having considerably the worse of the argument, were exhibited—do fair publisher was Arres pure legal on defendati for earling an Visuale to large, were an comnaminent triesceptive à toutes personne de quelque quité qu'elles fument, du almagheir, quey que de puse fair de applitted, que de relief l'antierque qu'en le plane de faire faire.

To those who are acquainted with the history of philosophy, and the state of opinions in the days of Bergerse, there will appear considerable merit in the satire which has just been exhibited. The supporters of the ayssess of Aristotle had at one time (ridiculeus as it may seem) procured an Arrif at Paris, to prevent his doctrinos being contested; and some of his admirers, enraged at the shock which Descartes, Gassendi, and other philosophers in France at this time gave to his epinions, were desirous of resorting to a similar expedient.

In spite, however, of the Lunar Arvit, the controversy grew so warm, that, as a last resource, Cyrano was ordered to appear before an assembly of the states, in order to judge of his rational powers. The examinera interrogated him on some points of phikosophy, and refuted the opinions which he expressed in his answers, "de sorte que n'y pouvent répondre, J'allegnay pour dernier refuge les principes d'Aristote, qui na me servirent pas davantage que les Sephismes, car en deux mots ils m'en deconvrirent la fansseté. Cet Aristote, me dirent ils, dont vous vantez si fort la science, accommodoit sans donte les principes à sa l'bilosophie, su lien d'accommoder sa Philosophie anx principes. Enfin comme ils virent qua Je no leur elabandois antre obose, sinon qu'ils n'estoient pas plus scavans qu'Aristoto, et qu'ou m'avoit defendu de disputer contre cenx qui nicient les principes; ila conchirent tous d'une commune voix, que Je n'estois pas un homme, mais possible quelque espèce d'Austruche, si bien qu'on ordonna à l'Oyseleur de me reporter an cage. J'y passois mon temps avec assez da plaisir, car à cause de leur langue que Je possedois correctement, teut la cour se divertiscoit à me faire jaser. Les Filles de la Reina entr'autres fouroient tonjours quelque bribe dans mon panier; et la plus gentilla de tontes ayant conceu quelque amitié pour moy, elle estoit si transportée de joye, lorsqu'estant en secret, Je l'entretenois des movors et des divertis-ensens des gens de nostre Monde, et principalement de nos cloches, et de nos autres instruments de musique, qu'elle me protestoit les latmes anx yeux que si jamais Je me trouvois en estat de revoler en nostre Monde, alle me suivroit de bon coenr."

This lady continues to manifest much attachment to Cyrano, and her affection reminds us of the love of the fair Glumbalchitch for Gulliver in Brobdiguag.

At length his friend, the dense of Scentes, persons the deliverance of Cyman, who now narrowly escapes being conducted to double for imperie, in maintaining that or earth was not merely a mono, the an inhabitor world. This had been operaged with so much send, and so many good arguments by the sepse, that Cyman, in recruit, ancerted that the bad come to point that their earth was not an earth to at more. "Make, in direction toos, vancy vayour de la term, de rivilers, don mere, que serois-ce dont tools? Nimports, reports de, Architect mouves que on cité que la larme, it is vinue water full to contriné dans les donces or d'yet tainer certaine, on vous normit self. If in fit set reid an grand cledit de rive, il as fant pas demander si on this laur generation, to vous normit self. If in fit set reid an grand cledit de rive, il as fant pas demander si on this laur generation. The propose are bediepered from this second contriner, and the contriner of the contriner dans the respect of the contriner dans the contriner dans the second proposed contribution of the contriner dans the contribution of the contribution of

After the deliverance of Bergene, was we presented with a number of philosophical disquisitions which he held with the decreas and his friends. Among other topies, the warried of a person of quality, deched out in a particular manner, giver rise to a discussion, which has been solved upon by Stenes-— Cette constraine me sensible has carteriologies; reputation, or so mosts months has carteriologies in reputation, or so mosts months has carteriologies of holdsone and to perture mo Epife. Mill Thiots sens 'excessives': O man pattle homes, 'ordin-cett,' purp less grands de votent months sent si campas de his parands d'un internate qui designe un borsones, et qui i est depui per para mon defirires, effen facusare part de si chairque saintel, et le reputation indistigable che folderes de la nature. Multiverance omtries, or les marques de principais and ignoribiers, et et cit celle d'administration sort de homerables."

At length Cyrano, after performing a tour of the mon, is conducted from that luminary is surfi, in the arms of the clause, who places him on the acclivity of a bill, and disappares. Some latting postants, whom he meets, cross themselves in great terror, but at length conduct him to a village. Here he is assailed by a predigious behing of deep, who, emelling the doors, or effect more, angular which they were executioned to bark, keep up an incessant channer. By walking a few days on a terror in the run, in order to purify himself of the smell, Cyrano ferms a trace with his casine flow, visit blues, and at length arrives at Marcellon.

Such is the abstract of the 'Hidde's Conique des Estats et Empire de la Leus,' a work which, like all those of which the satire is in any degree temporary, has lost a good deal of its first relish. It is, however, still worthy

<sup>•</sup> This is probably intended as a satire on a prompt in Charron'; recogliment Fair do fundamed. Il dots pro bounds to b' constraint du work "Sair his imposi": "— Halas in order boil to intender, on one cortes, extraor characteristic papel are not special data salive at d'une one se direct qu'il in derable na plaint de produire non scalabilité; pique jet es qui seri a large l'homme out me marque du nobleme—on lies qu'elle de deretties en plaint que, estemant la trouppette, en deve, on crediblité me prin, on impare, in entre des marque du nobleme—on.

of perusal, especially by those who are acquainted with the philosophical history of the period in which it was composed and the leterest which it excites must, to an English reader, be increased by its having served in many respects as a prototype to the most popular production of a writer so celebrated as Swift. Nor has it only directed the plan of the Dean of St. Patrick's week; since even in the summary of the Lunar Voyage that has been presented, many points of resemblance will at ence be discerned to the journey to Brobdignag. Gulliver is beset. at his first landing on that strange country, by a number of the inhabitants, who are of similar dissensions with the people of the moon, and who are astonished at his diminutive stature—he is exhibited as a sight at one of the principal towns -- he answer the spectators with various monetchank tricks -- and acquires an imperfect knowledge of the language-afterwards he is carried to court, where he is introduced to the queen's favourite dwarf, and where great disputes arise concerning the species to which he belongs, among the chief scholars, whose speculations are ridiculed in a manner extremely similar to the reasonings of the lunar sages. The general turn of wir and humoer is besides the same, and seems to be of a description almost peculiar to those two writers. The Frenchman, indeed, wanted the advantages of learning and education possessed by his successor, and hence his imagination was, perhaps, less guarded and correct; in many respects, however, it is more agreeably extravagant, and his aerial excursion is free from what is universally known to be the chief objection to the satire contained in the four veyages of Gulliver.

As Cyrano's 'Journey to the Moon' is the erigin of Swift's 'Brobligmag,' so the 'Illistive' des Eduts de Seld' seems to they songgested the plan of the 'Veyges to Lapata.' This second expedition of Cyrano is much interior in merit to his former one, but, like the third exercise of Gulliver, is in a great measure intended to expose the value parmits of schemers and projectors in learning and science.

From an initation, probably of the works of Bergeres, many of the Vergeys Inaginaires', which appared in Frame during the first half of the 10th control, schedule carries through the lawvedy bolics. 'Lee Vergess de Millerd Colem,' by Marie Anne de Homine; is the seconst of an English achievan, who, during the distributions of all near out to the time of Crownell, in anticorphical time is quality and in the slope is carried by a Friendly gordies through the most and sweep planets. The ambier accommodate the character of the inhabitant of social during the same scale waves planets. The milest accommodate the character of the inhabitant of social during the same between one cube. Versu is the course of samely indifferent verse versu of a relation of individuals calletted to the predominant position in the planet seems also to have been occasionally intended.

Bishop Wilkins could not escape, for a cynic in 1796 thus writes, in reference to his 'Discovery of a New World?'—

All hail to Cestria and her mitted Lord, And may Pierian strains for aye record That lawned Endymion of a happier age, Who, wild with rapture and empyric race, On bold aspiring pinion could presume To journey they the test athereal gloom; Who, tired of earth and dressus of goward rest, Such in the Elysbam of his Cynthia's breast.

Schiller gives us 'Pegasus in Harness,' which has been translated by Sir Edward Bulwer Lytton as follows:—

Al Smithfield ener, as I're been told, for non-mid-field ener, as I're been told, A hard, whose beans from their war all free, Their up breast the mone's pairer, and the second of the second of the second of the proof parameter. And praceed as if he proof parameter, the coverage was greater to truch, "they create, the say beginded changes? "In truch," they create, "as splended changes? "I he truch," they create, "the proof parameter is the bard, they create the bard, "the coverage was the bard of the bard, "the bard that the work of the through the air? Who'd trust his neck to such a five it?" he stort, the bard could find no boyer.

"Let's see if we the thing can settle. Those usedess wings my man rank pay. Or the down high—I like a crop! "I might draw my cart, if key m bounds; "T might draw my cart, if key m bounds;" The lumpy Land with jey consents." And Hedge lears off his prine, contented. The nide's crite, in the cart; Bodge crics, "Gee hap!" and of they start, the scarcety fricts he look beliefed, Rkirns, gooten, and scampers like the want. Park wings begin for heavier to lithy..."

And now the cart is in the ditch!

At last a farmer plucked up mettle :

"So ho!" growts Holge, ""tis more than funey!
"Ye got a pean both for my money.
To-merror, if still service,
I have some score of felts to drive;—
As kader! I will yoke the breat;
Twill sare me one god pair at least.
Choler and collar wear with time;
The lively regules is to his prime."

SHIP

All's well at first-till, with a start, Off own the wazzon like a dart, Light bounding on, the flery steed Inspires the rest to equal speed; Till, with tall crest, he suffe the beaven, Sparns the dull read so smooth and even. True the impetuous instinct to, Field, fee, and hog he sempers through, The frenzy now has entight the team: The driver togs, the travellers scream. O'er ditch, o'er hedge, splash, dash, and crash on, Ne'er farmer flow in such a fashion, At last, all battered, bruised, and broken (Poor Hedge's state may not be spoken,) Wagner, and team, and travellers stop, Perched on a mountain's strenget top ! Exceeding sore, and much perplext, " I' fees ! " the farmer cries, " what next? This belter-skelter sport will never do, But break him in I'll yet endeavour to: Let's are if work and starving diet Can't tame the monster into quiet!"

The proof was made; not, save not if in Three days you'd seen the hipportifies, You'd series the oeble bust have known, Starvad duly down to skin and bone. Cries Hodge, rejucted, "I have it now; Bring out my ox, he gow to plough." So said, so done, and drell the tether, Wing'd home, place ox, as plough together!

The unwilling griffic strains his might. One last strong struggle yet for flight; In vain, for, well insared to labour, Plods sober on his heavy neighbour, And forces, inch by inch, to creep, The book that love the sir to sweep; Until, worn out, the eye grows dim, The sineses fell the foursiered limb. The god-steed droops, the strife is past, He writhes amidst the mire at last? "Accurace brute!" the farmer eries: And, while he bawls, the cart-whip plice, "All tell, It seems, you think to shirk, So fierce to mo, so dull to work! My twenty pounds!-Not worth a pin! Confound the rorse who took me in l He vects his wrath, he plies his thoug, When, lo! there gaily comes along, With looks of light and looks of vellow. And lute in band, a bexom fellow; Through the bright clusters of his hair A golden eirelet glistens fair, "What's this?-a wondrous yoke and pleasant!" Cries out the stranger to the peasant. " The bird and on thos leashed together-Come, prithee, just unbeace the tether: But let me mornt him for a minute-

CHAP. XI.

Leaps on his back, and smiles at danger; Secare field that stood the master's rein, Whom all his few returns again; Whom all his few returns again; Light finalest from the kindling eye; Connect from a creature of the mil, 19-bold the spirit and the god! As sweet the whiterind, howevenerd springs. The ordivate slower of his wings; The ordivate slower of his wings; Los of the spirit and the god?

That beast !- you'll see how much is in it."

The steed released, the youthful stranger

Albert Smith, after having experienced the dangers as well as delights of ballooning, us previously told, could hardly have been expected to refrain from extracting annaement from so fertile a subject. 'A Flying Visit' and 'The Nassun Balloon' are from his per:

### A FLYING VISIT,

The by-good September,
As delian supramember,
Be a Plansed their
At thesis their sensory saves but on ember,
One fine a Bertenson,
There werk up a Rallon,
Which did not stress to the Earth way aon.

Which did not stress to the Earth way aon.

Which did not return to the heartn rety soon.

For meaning the sky,

At a short a mile high,

The Airsman to blue in every fear, with no burthern to left;

It was a short a mile high,

The no nothing at all;

And there cross the queriess of where it would fail?

The many curious speculations on this subject we must leave untold-

However, at last, When six weeks had gone part, Intelligence came of a pleasible cast. The news soon spread that it was once again visible.

But still to and fro It continued to go,

As if looking out for soft places below;

Eventually the phenomenon came more distinctly in sight,

Plain to be seen, Underneath the machine, There dangled a mortal-some swore it was Green; Some Mason could spy; Others named Mr. Gye:

Or Holland, compell'd by the Belgians to fly.

The personal description of the odd little menater, a sort of mooncalf, we must also pass.

Meanwhile, with a sigh, Having orea'd one eye, The Stranger rose up on his seat by and by ; And finding his tengue,

Thus he said, or he sung, " Mi criky bo bigymy kickery bung!"

" Lord! what does he speak!" " It's Dog-Latin-it's Greek!" " It's some sort of slang for to puzzle a Beak!"

" It's not parly voo," Cried a schoolboy or two,
" Nor Hebrow at all," said a wandering Jow.

Some guess'd it high Dutch, Others thought it had much In sound of the true Hoky-poky-ish touch:

But none could be noz. What the Dickins I (not Box) No mortal could tell what the Dickins it was! When who should come put.

In a moment like that. But Bowring to see what the people were at-A Doctor well able, Without any fable,

To talk and translate all the bubble of Babel. Then stretching his hand, As you see Daniel stand,

In the Feast of Beishazzar, that picture so grand! Without more delay, In the Hamilton way He English'd whatever the Elf had to say.

The Doctor, however, interposed. Among other reasons, he observed :--

" Von'd best let him go-If you keep him below, The Moon will not change, and the tides will not flow."

No difficult job. It had only to bob

Slap dash down at once on the heads of the mole.

But all were at fault; From the beavenly vault The falling balloon came at last to a halt; And bounce! with the jur Of descending so far,

An ontlandish Creature was thrown from the car!

" Krak kvaziboo ban. I'm the Lunatic Man, Confin'd in the Moon since creation began-Sit maggy bigog,

Whom except in a for You see with a Lantern, a Bush, and a Dog. " Lang sinery lear,

For this many a year, I've long'd to drop in at your own little sphere,-Och, pad-mad aron Till one fine afternoon,

I found that Wind-Coach on the horns of the Meson.

44 Cook associarse on. But, besides you must know, I'd beard of a profiting Prophet below; Big botherum bletker, Who pretended to gother

The tricks that the Moon meant to play with the weather.

" So crimus on crush. Being shortish of each, I thought I'd a right to partake of the hash---Slik mittle an mak, So I'm come with a rock To sell to the trade of My Own Almanuck .

.

" Wept scepton soist scept, Pray this Copy accept "-But here on the Stranger some Kidnappers load, For why? a shread man

Had devis'd a sly plan The wonder to grab for a show Caravan,

. So awini a threat Took effect on the set; The fright, the was more than their Gnest could forget : So taking a jump, In the car he came plump,

And threw all the ballast right out in a lumn. 3 F 2

Up sour'd the machine,
With its yellow and grown;
But still the pals face of the Creature was seen,
Who caid from the car
"Jam is possion of yer!"
That is.—"What is and set of yillains you are!"

Howbeit, at some height,
He threw down quite a flight
Of Almancks, wishing to set us all right—
Aud, thanks to the boon,
Wa shall see very som
If Murphy knows most, or the Man in the Moon!

## THE NAME BALLOOK

Keeping in mind the leading pastines of "the people" at this season, we seine the opportunity of saying a few words about the balloon trip from Cremorne Gardena a week or two ago,

The popularity of halloon is something enriess. It comes by fits and starts, like a stage meeds, or so English meetine, or an entery for the glismine chans, or an exhibition of god printers, or an overfoot of dwarfs, and signs' wouldes, and immore animals. And an arremant is a species of permaid grain. In the water we have nother of this in high permane with his hallon, in the claysals start, which solds of the residence governed slippers; but no second does the fine weather arrive, thun he each his akin, unfolds his wings, and is now more a reservoir of the sit, stull be "winted from the boards of the first multiple and by "And these he disappears as saysteriously as the first, or the pine, which we hold to be the greatest insteries of opentaneous connection because.

Whilst all sorts of progresses and voyages, by sea and by land, have received every attention from our artists, we soust confess that those in the air have been much neglected, as to illustrations. They have been principally confined to a large street woodcut, of a car filled with distinguished ladies and gentlemen, with no end of fireworks behind them; and an individual in the centre, supposed to be Mr. Green, politoly bowing to the spectators, who, in kit-cut proportions, are waving their buts and umbrellas, and shaking their handkorchiefs, and giving way to all kinds of frantic enthusiasm. To supply this void, we despatched two artists to the scene of the last balloon ascent; one was to go in the car, and the other to remain on the ground. Some interesting sketches were the result. The first is entitled, "View of the company at Cremorno at the moment of ascent," and gives a lively image of the growd in the grounds, in the midst of whom might have been seen Ibrahim Pacha, had the mob not hustled him up so that he could not be made out. This was the only illustration which our serial artist favoured us with, as he got so frightened, and so completely in the clouds, that his art failed him. Our mandane dranghtsman was more lucky. He first sends us a view of the balloon as it appeared from Waterloo Bridge, amidst the cheers of the boys, who directly started off after it, as vaguely as they would have done after a fire-engine, which is over a reckless pursuit, whose termination may not be guessed between Gray's Jun Lano and Epping Forest. We ourselves were fortunate in taking a sketch of the balloon as it passed over our attie skylight, whilst we were pumping our brains for a subject. The following came by the inspiration of the moment :--

## SONG

THE AERIAL GREEN.

Air-The Iry Green.

Out a during man is the Afrial Green,
As he rices above the wall.
19 the turty Creasoras, or fee nothing is seen.
From the road tessic old Varnahal!
How block revier the wind may feel,
Or durk the night may keep,
He lights the match of his firework wheel,
Through all bloom may sleep,
Creeping where mobally side has been,
A string man is the Afrial Green!

Nince Oreen fast began his airy career, How many his rivals have been. But more like himself through the heaven can steer, He's no knowing, afthrough he is Green. For Hersen shall go, and be illumed his fame, And Sequeted his Airal Mily. But Green shall still carry out his name, And Souther his revery trip, Crepting up to realiss masses, A desire man is the Airal Green!

Our artist took his noxt illustration—a very graphic one—from the balloon as it appeared disappearing. There is much to praise in his spirited skotch. The treatment is simple, but very expressive; the balloon is



Photo encognizated at the Ordinative Starrey Whitee Scattlemagnion under the superlateables on Copi Whichous have RL, Let Six H. house RL LRS So. Director and the superlateables of Copi White and American Starrey Whitee Starrey W

evidently a point, and the drawing is free and unstudied. His next sketch is of the balloon when it was out of sight; and a similar one was sent us by our aerial artist-who receivered his presence of mind a little-of the viow from the balloon after nightfall.

We must for the present conclude our paper; but an amateur who was amongst the voyagers has promised us his portfolio, to which we may possibly recur, and present the series of illustrations complete.

I much regret that I have not been able to find the name of the author of the amusing paper entitled

CHOTCHETS IN THE AIR.

Planet Earth, 29th September, 1836.

MY DEAR TON. I have purposely postponed a reply to your impatient letter of the 16th instant. I am grateful to you for your kind anxieties upon my account, as evinced by your-" P.S. Pray answer this estion the drive of a sexua-MORENT." (I give you your own complete markings.) Now, suppose-do hot suppose-I had complied with your request, and answered your letter immediately upon its arrival, which occurred within only a couple of days after my return to this pen-ink-and-paper earth of ours-why, I doubt whether you could have understood one sentence in twenty of all I might have written to you; so inflated, so exalted was I, that my style must occessarily have been affected by my own feelings. You are aware of my detestation of that barbarous jargon which is compounded of Gallicisms, and Latinisms, and Italianisms, and all manner of issue (with the single exception of good-English-isms), and which is nick-named the modern fashionable style of writing : from all such ires my discust of them would have kept me clear; but how could I have avoided the perpetration of a few balloonicisms? The moment I had "pulled the liberating iron of my sensations," I should inevitably have "thrown out every bar of the ballast of judgment," and abandoned myself without opposition to "the bacyant gas of enthusiasm," How should you have liked that? Only two pages of it?-one?-only half a rage? No. no Tom: rely upon it 'tis better as it is.

You ask me many questions. The first in order I will answer first, for the reason that it is the

"Did you go up in a balloos on Friday, the fourteenth?" I may reply to you in the words of Hamlet, I have been "nearer to beavon than when I saw you last, by the altitude of a chopine." But the next time you sreak of that particular travelling carriage (the Great Nussau), pray speak of it with becoming respect, and call it the balloon. All others, whether beneath the clouds, within or above them, are mare balloon sprouts, chickballoons, balloon-ettes, in short. As is a peach to a pempkin, so is the biggest of those to the Great Nussan. You sit in a thing like a sense boat, and look up to a world floating above your head. Mothinks I hear you say-"Hold, there | Let off a little of your gas." I will; but not much, Torn. And now, having replied to your first question, I will, for the present, float over-(I beg your pardon, but I could not help that)-I will pass over all the intermediate ones, and notice your last. For this irregularity I have two motives: first, to get rid of a perplexing inquiry; and secondly, to lot you orderstand at once the kind of account of a balloon-trip you most expect from me:-nothing about "Here the barometer fell to -," "Hare the thermometer rose to -." "Here the moreury stood at -;" no balloon-jargon, but a plain, surface-of-earth description. So, on to your question.

"According to your observations, in what maonor, and to what extent, are the interests of science likely to be advanced, and the state of society in general, morelly and physically considered (dividing your answer to this portion of the question into two branches), likely to be improved by the use of halloons?-and within what probable period?"

This question is framed with such extraordinary precision, that, to one who could, there ought not to be the slightest difficulty in answering it. My observations, however, having been confined chiefly to the looking down on the chimney-tops, I am enabled to reply only, with anything approaching to certaioty, first, that I do not know; secondly, that I cannot tell; and thirdly, that it is hard to may. Yat are there points upon which I will venture to speak positively. One (and, perhaps, the most important) result of an ascent in a balloon, is, in a releasing point of view, that you may be quite more of coming down again—none/how; the second, aftering the non merally, is, that it must, in a greater on less degree, dearwise installed of their helicity in their affects the men physically, and is, that unloss he order the clouds to be well strete for his reception, be it wery likely to get a lock of relementation (a. I have done) from helogy regreed up in a sharp sone. For any much more positive and metal information you may require, I say have to refer you to accessants of greater apperies, may be a considered information you may require. I say have to refer you to accessants of greater apperies, may have been appeared to a point you. I will say may get it. I now much now more object them policy. I will say may get it. I now much now more other of your questions.

" Why did you go?"

I might period this imprity by plosting the instable ambition of foliage in the world, but that I abbits a pan. Contingit, then, we sake he leading matrix, being a settle weigh set the endry see. I wasted to go out of swars and this conguing card town, or the drose is in it. Then, the nevel mode of travelling! In someth their is neather, the grain intered being period and being districted in condex, closed-with conduction it entended, relatively and the contraction of medical whether any down, forward, both, you seems to be suspended motivation in the six white excepting above, below, and ascenda is complementary that give tended not every six The contraction of the con

Then, again, another amongst my motives was a yearning after variety. It is idle to talk about going out of town for the sake of chasps, Tom. We quit London and go to Brighton, or Cheltenham, or Paris, or Vienna, or Constantinople. Houses, houses, houses! We wrany of the ruralities of Wiltshire, and try Wales; tired of Wales, we fly to Savoy, or te Switzerland: it is the same thing. Trees, rivers, and fields; fields, trees, and rivers! with here and there a hill some certain number of feet higher or lower than another! Then, everywhere, in all places, people, people; people! And this, forsooth, we call a change! You remember poor Charles ----, who when tired, not absolutely of people, but of the every-day countenances he was in the habit of meeting about town, went to Thebes in the hope of seeing a variety in the "human face divine." Almost the first man he encountered was his lineadreper, who was employed in taking the length of a fallen column with a vard menaure. And what was his reason for being there? Change. Margute, he said, had become vulgar, and-which was worse.-Ramsgate was trying to be gented. No; believe me, Tom, that, for a positive change, there is nothing for it but, instead of going dues into the country, to go up out of town. Once above the cloude, adicu to homes, trees, fields, rivers, hills, and people. There might you be for a month with millions of chances to one against your halloon being jostled by snother gentleman's. And such independent travalling too! As our witty friend B-, who made an ascent some weeks ago, truly mid, "No turnpikes to pay there." He might have added, no "What's the number?" no "That 'ere ticket don't clear this here gate;" for positively, Tom, there are no crates to clear. The boundless regions of air are open to you; not an acre is enclosed; and for ever might you float there, unimpeded by a humano cantion to beware of spring guns, or a friendly hint about prosecution for trespass, and the amiable rigones of the law. Then again, you escape the three main annoyances to which you are subjected in foreign travelling elsewhere: passports are not required-nobody is there to ask who you are. where you come from, or what you may please to want in the clouds. There is no busy, prying, spying police to watch your movements, so that, were you dishonestly inclined, you might pocket a handful of little stars for brooches and broast-pina, if you could hat reach them; though let us hope no aerial trevaller will over compromise the character of the natives of the earth by so shabby an attempt. And, last of this category, there are no Custom-house officere to search your car, and ask, "What have you got in that bottle?" But, let me tell you, there is one set-off against these comforts: there are no inns in the whole of that country; so that when what we had "got in that bottle," which was some sherry, was exhausted in drinking to the health of our dear little Oncen, we could not get our bottle replenished for love or money. So you see, Tom, things are not absolutely perfect even there.

And then, the noiselessness, the perfect quiet, which I have befare alluded to! It is the sublime of stilles. They who have not heard it—do not said this expression to your collection of bulls—they who have not heard it (for the ear is affected by it) can form no idea of it. In the etillest night, on the quietest spot on earth, some sound in coessionally heard, how such or slight sorver it ho—the rigids of water, the hearing of an insect, the fill of a load. But up there, you might facery yoursallifering in an age anteredent to the increase of cound. There might you include to the attenues in the hazary of thought, reflection, moditation; then revel in all the delights of imagination, with not the rading of a betterfy's wing to put your function itself. And, then, for a certain noticity of architects of which you and I are members!—O Tour! such a place for building confers in the air?

Another of your questions (for I do not take them serialis), is, " How high did you go?"

Reliaministly spacking, not every high. We did not go high enough to how the namie of the sphere; or to have noted out what set of looking filled we wish to man in the mone, even held that clined help cond-modell to make hearth? widths. Indeed, the old hillioners, who fewned five of our purpy of nine-that is to may, our admirable asyinger. Moreas, his layly, Ng. Spenor, and two of the Moscon Righten-how old hellomers. I may, declared we went no height at all; and, in fact, or greated elevation do not make a record for thousand for (three-quateries of a sub-), or, in malt in expans internate amounted more intelligible, only about twelve times the height of 18. Park's, measuring to the top of the cross. It was just high comple, however, for a familie to her man in, the theorytened in assumation, the old restrict measuring the heart per conditional and the purphy which make trip's five weeks any, we had not taken the serve study in the two hearded and exemption accordingly almost making true specified the accident of height grinten and the hills of the contraction of the ingel triven up to the clouds in a Publingson oundress, as that he should led you here from them with measuring to the clouds in a Publingson oundress, as that he should led you here from them with measuring the value of the proposal of the contraction of the length of the contraction of the cloud of the recording the contraction of the contraction of

I next come to yeur "three single" questions all "rolled into one."

"At what time did you go up from Vauxball Gardons? how long did you remain up? and at what time did you come down again?"

I do not despite you for thising about a hallong ging up for it is an error which you shaw in common with some millions of our filler-creatures and I, in the sky or of giveness, thought with the rest of you. I know better zone, Ton. The fact is, we old not yo as at all; but at shout firm instants part six, on the cervining of Firstly, the 14th of Septomele, 1518—Cross and "particulars," so when they are far you—about but that now. Varnhall Garsine, with all this people in them, now done? Ton—Ton—I cannot have been desrived. I speak firms the eithers of any cases, found be quare perspitent of the fact. Then eather that have or for zero-grainment trials of the powers of the hallons to enable the people in gifts were from a with asthy to themselves, down they all worst about thiny fact; then, up they case again, and so on. There was an equipping that shalls in any weaker back-backet, strictly unconsistent of maximum 15th along the Research of the contract of the strictly and the shall is not with a pair of chance, beam it is set with a veryinging as it is quare print paying paying the contracting (your great Metrophic, as you including all it, having been placed on noters for the occasion—I am artified of their—was genefit; relief wave from was done.

At once to activity you spose that twe other points of your triple (cold parlets not for abiling, your most monitoritiality) framely operating, your remote and the contract the terms of the terms of the contract of a quarter part size, our abit conductor, with an undestable grapping-term—an implement not made to take "No" for an answern-angle blad of the earth by the map of in such, as it ways to Montande This, and headed it up to me with profice own. From of our party, including Mac Gross, suppose out of the condination of the condition of t

Wam't it the first Lord Theriow who longed for a day's shooting in an English such? This may seem as odd out-of-place question; but it shall presently be accounted for and, I trust, to your satisfaction. But, now, to another of your inquiries.

"Did you, when you were tolarably high, experience any extraordinary sensations?"

None whatever, Tom, but of soluration and delight. I apprehend that judging from the common consequence of looking draws from a point considerably alreaded, you expect to be talk that the semantion of distincts was amongst the number. I remember meeting the younger lb——, the surgeon, just sher he had assisted at the appealing of Paron's shall. "Did for good artiful extraordinary in it?" inquired l.— "I guess what you expect," replied be, laughingly: "Wo found a little water, but so Greek." Now, you are expecting to be told

How fearlo: And dizzy 'tis, to east one's eyes so low!

Not no, however, from a billion of any height. I do not have the creat elevation of the Subappers offit. I believe though it is ont; by a gree disc, a high as the error of Sr. Darth. I have been completed to withhort by an overproofing contained any and backed over into the set, but have been completed to withhort by an overproofing contained of gildlines. I have been based green from the opt of the time in the Bergerth Park (neighby indomental the Cohosensin) while is considerably lower. Next, which there days a friend's channels exist of such as the proof of the proof

Now, low is this extraoellosury elementative to be accounted for  $^{*}$  I have bound it explained two—low shallow par or entirely destuded from the south video are no intermediate points by which they exceed to granting combined downwards; so that the inpression of height upon the sextee, that impression which cause diminuous, is includint, regard. From the propert of a boson, or a form a column, or a still eight eye, or the contargy, it led by an intervening median down to the low, and the relevant upon which you are plosed being their rendered pulsplain, diminuous (as most  $\lambda$  in a contarge  $\lambda$  in the contarge  $\lambda$  i

The falterner that walk upon the beach.

and who

I think, by the

Appear like mice;

The tall anchoring back distinished to her cock:

it is not, indeed, by any of the objects which he describes as seen in the extremo distance below. It is,

Holfway down
Hangs one that gathers samphire: decodful trade!
Methicks he seems no bireer than he load.

Setting saids the frightful priests of danger as poverfully passed, one may any, by the work "bary one" and "bought trans", as having making to do with the present question; that girly and fixed "half way down" it is which, more than all the rare, impreses the imagination; and which,  $\alpha = nous$  of supportine, readed, or, rather forces the mail to conscribe the world which of the proprises. Nor firm as balloon there is no "halfway been." It is all (dark vay sed) or nothing; and from our surful annihus, when were the rive, we consider a facility of the proprise that there whereing with any year described to the propries of the properties of the reader's a thirty on described when side has the propries of the reader's a thirty on described when in the propries of the reader's a thirty on described when in the propries of the reader's a thirty on described when in the propries of the reader's a thirty on described when in the propries of the reader's a thirty on the propries of the reader's a thirty on the propries of the reader's a thirty on the propries of the reader's and the r

Now do not from this, Tom, take it into your head that I am about to open shop as a philosopher, and turn deeper in causes and effects: no such thing: the theory I offer you, right or wrong, good or bad, is none of my own; but as it is the best I have been able to process, I generously beg your acceptance of it.

A timely visit. At this means, Leder-4 (so moss Shakayanian, and we have poor's exponsions and confinedow at this first provide) is with an II. In emilate, but the blacks, in a note proof being well by with an equated, arguests an opinion at variance with the theory I offer year. Were that theory my own I would defined it against him were be revery obtainers, as in it, I ware in its raight above the resulted is defense. For every own part I think the deter in the wrong, and, if I does, could set him down within the compans of two communications, and of all they write it lives of zero poetry a thorough an absonance mixedum, and of all they. What was a Johanse, induced I we wrote the lives of zero poetry a thorough an extension of the property and the property as the property and the property an prefere or two; a for passable essays; compiled, er composed, a dictionary; lest was be even up in a balloor II by the vern, Bowell is epically silent ent pas point of med reverballagi importance. The wax Lenterinates alight respect for the irvitation of literature, as he was went to be called; its time I have taken to read the housetaines of Mr. ForceVerl, the healing circlining of the "ForceVerl, Dictater—for, now-day, Hinstrate and existence, in all their respective banches, we made up and sold in packets price only one pears such—since then, I have learnt to treat the balancing body with becoming constant, As for Forge—for its Adilono—place for from Forder—for its Adilono—place. I have learn to the properties and the Queen-Annal-some tied together in a banch—as for for them. They were taken, high-acting deep-searching and-dimending hour-frienting part of the criticitys——. I have what conclusion you may plose from the comperison, my faith in my 'Venny Dictator' and his past is unalterable. "I stand by my order," and

Nul n'aura de l'esprit hora nous et nos amis,

So now to proceed.

"Where did you go?"

Now, then, once more for the "where?" The balloon, which too heavily—New, don't be impatient, ergy, Tom; you shall have year answer in a minute or nor but if one may not digress in a familiar letter to a friend, where the dence close is digression allowable?

I have been told that the wished was of one of the Samby assupports said, the reason of that two, that contain friend of yours, the was in the case, had got one of the beeny manascript in this potent; but that the being theorem ever, the markins went up rapidly. Pleasant, this, for a probasor of girl literature, do, Tom? Nover mitd; I had as it, one must, as the sailers say, "girl and both it." I vender they poor Pleasant Samber and the sail was the sailers and the sail was the sailers of the sail was the sailers of the saile

Once more, then, to-" Where did yen go?"

The helicon, which now havely, being lightened of a large of inflator—not bag and all, Ton, or mercy upon the most matter-field caid to be found in all the Relaises of Dathese sath might have enhanced to come in its way—not excepting even the cast-time assume af a row (7/1) in a certain Poblica print, who, in his notice of a suppressed nature upon the needled resultion and the olde, and which his, for the purpose, as uninterrupted needled or international blumbers: he, poor lancenees! taking the whole in order sevienance, gravely complains that then writer of the saths howes no nears about this at some hard lightener hower of hard-needled. And here be once of your backers of public opinion, ch., Tom 1—Batta, at lease are giving, the billion being lightened of a long of blatta; if because a fitth mere ministing, and, from the direction is two acting, exceeding finishment of a long of the satisfaction of the control of the satisfaction of the control of the control of the satisfaction of the control of the con

rise and rise till, to the low of mortal eye, it appears no higger than a pea: oracely as it is with some poor, penfic-lap, human thing wiseer real insignificance is not discovered till it is raised to an eminence which it is muyualifed to maintain. And thus, Tem, something not unuseful, if properly considered, may be learnt even up in "the desert air."

But, methinks, I hear you exclaim, "But what has all this to do with my never-to-be-answered question," Where did you go?""

Will, then proved the property of the property

Now, again, to your lotter; and I promise you I will no more digress-unless the temptation should prove an overmatch for my resolution.

"What did you see?" comes next.

Sights, alt leads nights I Galliver not flabshoos. Note and women ais include tail; and his proportions awe now, they diminished—for for, for, three incluses. I can glot J an down eapies, for I was including a way contemptions aprison of play perfects. I approbably, however, this feeling is not peculiar to halloonise, but that it is common to very samp who are placed but as tills above their fillewavestures: the higher of a sure carrieght-wheel will secontiane produce of the sure of the strength of the sure of the su

Go up in a balloon. Twn; when you come down again reflect upon what you have seen; but, chiefly, recigitate the throught which the movelty of the situation cannot fail to seggest to say but a min of mod: and if you find yourself a hander philosopher or a worse man than you went up—why, then, I shall only say you will not have deserved, as you will not have deserved, as you will not have followed, as you will not have profited by, your rides in the region of birds.

Slight: There was all Lordon at a group, made of bully-known, and pergenerators, and existinguidners, and decreason, with here and there, a distorece-things which you call diseas, and quires, and steeples. On the ventity of man! Then there were its squares and pleasant piters, believed with goodworty-bundes intersected by pythose wites, land's part whice, nearway and ingene. Then there was the "bread bound and be Pather Thames." Broad! I looked down upon it at its broadesten testing of with my half-cheed hazal all other doylers, and thought wast a lookedsen tuned to the architect of Warrier Delige to have bull it in accession of the way to be a state of the st

We pussed along the Blackfrier' Bord (almost in a direct line), having howeved for a while over Bedlam. I weakered what the businet bondy of the Bull-marker. Firstpase he near training almong than were eight to change places with the maddest of their composition—At one end of the Blackfrier Road stokin bold reportly, with four Black look of light about 11-duty were just beginning to light the stow—and at the further end were two other bublish, commonwearier of two great men. One could not bet estimate the stow—the stow of the stown—the stown of the stown—and at the further end were two other bublish, commonwearier of two great men. One could not be estimate the stown bolds, may reserve to a sharingly object to their purpose.

We were now blown westward, and saw one of our Theatres Royal. It was hardly possible but to mintake it for a niner theatre. This again may have been the effect of distance, which, when near it, or in 2, would doobtlass be discelled.

And what is that with its sloping, black-slated roof, that seems no bigger than a dog-kennel? Oh, melancholy object? it is a mausoloum, the last resting-place of so many departed Forenss / Enter its awful nortals and Hum welcomes you as her great! Yot such are the calenturian fascinations of the place-(forgive me for writing Mer)-that no sooner is one hapless victim ingulfed in its fatal depths, then another and another and another rush eagerly to the brink, struggling against each other for the fearful precedence of destruction. It is, in plain English, Le Théâtre de l'Opéra Italien. Tom, I have an odd crotchet. I have long been trying to be ruined and have not yet succeeded. Now, the first time you see advertised to be lessee'd "that most desirable property." such or such a theatre-but lot it be a large one, for I have no desire to be raised by halves, that I promise youeegage it for me. I shall be prepared to stake the usual sum required upon the adventure, namely 00,000/,; nor world I happle about an additional 0, or so. In consequence of my inexperience in management I may, the first season, be ruined for no more than three thousand, or four thousand pounds, and thereby be reduced to the necessity of taking nothing but a good house in town and setting up my cab. Next season I may have the misfortune to be ruined to the tune of five thousand or six, and thus be inhumanly compelled to add to my miseries a snug box in the country and a culicle. On the third and fourth seasons, ruin increasing to a degree intolerable, I shall be rudely driven out of my snug box and forced to take refuge in a bandsome villa, with nothing to console me for the inconvaniences and sufferings attendant upon my unhappy change of condition, but an additional equipage, a few more horses, and a -----. Tom, I mill be rained.

In youder little building space is found for the ripose of hundreds of illustrious max who have contrast give types that country, and hundreds once are therein commercial. It is Mestidinar Abley, wherein, as it is said, a monument to the sensory of Bruer is set to be created. In these them so wexant nock remaining to receive it? I have what you will rejly; but, the still, the question is a twe-shaded question, and (willings) saids it) a salicious case. The right handles—I must thursby moving the right-handle handles—is belt by former, "Place for the worker principal which is the sensor of the principal contrast, and the sensor of the principal contrast, and the sensor of the principal contrast, and the contrast of the principal contrast, and the contrast the principal contrast, and the principal contrast, and the principal contrast, and the principal contrast, and the principal contrast the principal contrast, and the principal contrast, and the principal contrast the principal contrast the principal contrast, and any principal contrast that any out and as type of should perfect the principal contrast that may not stand as type of should perfect the principal contrast that may not stand as type of should perfect the principal contrast the standard case is the first than the principal contrast the standard case in the principal contrast the standard case is the first than the principal contrast the standard case the following many recommends to their message.

Then we saw the status of George the Third, in Pall Mall East. Why do people abuse it so? I assure you it did not look so meeb anise:—to be sure, we could see nothing of the pig-tail or the cocked hat—and, indeed, but very little of the rider.

And the National Gallery. I dare may, now, you fancy one feels a more than common contempt for it when volwing it from one great a height. If no, you never ware more institute in your life: one contempt for it is not in the slightest degree increased. Perhaps you will explain this circemstance by the reason that it has been leaded does used from the first.

And now we were carried back again to where the Albion mills are sot; and thence, across the river, to the Tower, clearing St. Panl's in our flight.

A curious calculation was once made, having for its basis the relative sizes of the elaphant and the fies: that, if an slephant wave endned with the saltatory powers of its smaller fellow in the brute creation, it could leap from Hyde-Fark corner to Greenwich Hospital at one bound, clearing St. Paul's by the way! The intent of this calculation was, if I resultest rightly, to show that y Nixture had becovered on the dephants a parties of the finish finishing for becomes, how much more extremeland an animal in single to make that it stratuly is. I have laidly been reading a great deal of Thistophy, natural, meral, and publish—principally the laid—by which was a single property of the contract of the contract

St. Pail's! The belocking down upon that supendom structure from many times its own beight, produces artanges impressed on the mind! I can describe or express it but in one way, and an over forced to onin a word for the occusion; it seems like problégieze impossibility. Beyond this, one's assentions are not declarable; but I every not the delict—if and no one three leve-who has assemptished its, or can at any time afterwards refect upon having accomplished it, with indifference. New should you to use me for a most h I can my no more about it; in the ther—

I leave a blank, which you are at liberty to get some one else to fill up upon the subject—if be can. And now, Tom, you are welcome to quie my St. Paulserism, if you please.

I have enablely confused to you that PradeStipping is a word of my own coining; N. Penhowin issues from the ance illicit immediately. Now, mitther of these being errors, I cannot council you to that them is, no! you choose, you may nail them down no constriction spon the back of your Dietlemany, and prevent their grating into circumstance to the selectal Egislan of the reals. Ten; if all words of the same stamp port, and putting, forward, were to be tracted in that meaner, what a very ugly appearance our Johnson would make I will be proved to the same stamp port, and the providence of the same stamp port, and the providence of the same stamp port and posting of the providence of the same stamp port and posting of the providence of the provi

And here we are over the Tower. What would Julius Casar have said at seeing his White Tower, with its four turrets, converted into a stand of cructs! And here we saw some tiny red things placed all in a row: they moved first one way, then another; now they fermed a line, now a square, and so forth. At the Pantheon Banaar you may see exactly a like toy, which, by merely pulling a hit of string, is made to perform similar evolutions. I wonder whather it be an expensive toy-one of much value-for it is the toy by which, or strictly speaking, with which, national disputes are settled. This may appear very absurd; it is, novertheless, true, and I'll tell you how the matter is managed, Tom. Suppose two great nations squabbling together as to which has the best right to a little hit of berren rock, lately thrown up by some convulsion of Naturo, somewhere in the Pacific Ocean; which little bit of rock is of 100 nee to either party, and to the possession of which neither has the smallest right in the world. Well; this being "a just quarrel apon the issue of which depends the very existence of this great nation," says one; and this being also a "just quarrel upon the issue of which depends the very existence of this great nation," says the other: instead of settling the dispute by a sincere appeal to reason, common sense, and the common principles of justice-for, mind you, they both, in the first instance, make believe to do so-instead of that, they set about knocking to pieces each other's toys, and the party whose toys, "by the aid of Divine Providence," hold out the longest, takes rightful possession of the little bit of rock, and enjoys the invaluable privilege of blowing a born and shouting "Glorious Victory!" into the bargain. New that is it exactly; and if ever you and I should have the misfortune to come to a dispute, we will each purchase one of these toys at the Pantheon Bezzar, and settle our misunderstanding in that very rational manner, Tom.

By the by, here we beaut the tiny load play a small "field are the Queen," in comde not quite as powerful as these of an Edital shary; and—consequence of manifold,—as seven clotte we heard the bours struck by the repeata in half the pepper-custers and extinguideers of London; such of them as were provided with musical samf-boxes, chaning the quarters.

Just over the Jewel Office, one could not belp thinking of poor Colonel Blood, of crown-stealing memory. Unlucky dog! there were ne balloons in his days.

Looking down again, there are six little boxes, detached from each other, all of which might be placed in a

moderately-sized room. They are the warehouse belonging to the St. Kohninka Budwil And there are blanched of "dill advancing lacks"—(of which, when inmediately over than, up we notifier their mate we rigging, asthing but their white docks)—which appear as bigger than Thanes wherein! Therety brighthings! When suff-meltins shall have does in he for five the signals on rejingerly option, when all the suggests shall have been sub-associated: when Sambo shall be Experient of Jamain, Alchinda King of Brikaboka, and Plateny Viercey of Antigan; what apprecipies, what commodition single those distinctive ables and worknown will be far the purposes of our Colonies and Commorce! Don't sail away, little ships —you may see Rang be santed.

The wast of appropriateness—of subpation to a purpose—in a genetic failt, and is more sensibly failt, in Architecture, professes, then is any other—Sep 1 I will be inflict a discretizing roop, rule transity by you what put this thought into my load; it was looking from those warshoons to the new Half of the Goldsmith Company. Those—care, movie, substituting it could implicitly of princip and more; the Half pakes, in which are untited spiratener and eigence; which is creasmented with all that the richest face; temporal by the finest tante, could regard. It is not a little extraordinary that two things so dismillar chould have measured from the sum and, for both and we work of one artifactive and it may be a red that Hadwick has displayed on owners a taste in the princip of point prick and number or in his general police. Another instance of the contractive co

And that gloomy stone building is Newgate-a prison wherein are confined felons of different degrees in erime, from the petty pilferer to the deliberate assessin. Some are expinting their offences by a temporary loss of liberty, others awaiting their day of banishment, haply some the honr of death. By Draco! but this is intolerable! What right has man to inflict such sufferings upon his fellow-creatures? How should you like to be caged for three months in a disagreeable room in Newgste and prevented the exercise of your usual avocations? How would you endure the being torn from your family and friends and sent to a country not of your own choosing? With what stomach for your breakfast would you get out of your bed at eight in the morning to be strangled at nine, in the open face of day, and in the presence of thousands of persons collected together to glot their eyes with the sight of a human being throttled with a rope-for such is the fashionable phrase-you call it the cast-for describing the execution of a murderer; how, I say, would see like that? To this you will reply that you never cut a purse, ruined a family by forging a will, or mordored a man in his sleep, because he happened to have five pounds in his waistcoat pocket for which you had a pressing occasion. I reveat it; it is intolerable that any of our fellow-creatures should be treated in a manner which we ourselves should not relish. You are a kind-hearted fellow. Tom: you feel acutely for the asserted sufferings of your fellow-creatures, and would to the utmost of your nower relieve them: I will even go so far as to admit that you are not bloody-minded. But why will you persist in calling the new school of Humanity (of which I am an humble disciple) the "Humanity-runmad?" We require nothing more than that there shall be no seet of pusidment for any sort of crime; and when through the exertions of the popular member for Dyot Street (who is to be) this principle shall have become the law of the land, then shall Newgate and the Millbank Penitentiary be converted into sets of pleasant and commodious chambers for the retirement of thieves, forgers, and murderers, till the "affair," in their respective cases, has had time to "blew over."

On the opposite side of the river we are a line of arches, nearly as large as those of a langestic-table, sentending to the inspired of about three males and or it were several thirt transk, essential practices and the sentence of the control of

would there be Lord A's orbitated Smoke-juck besting Colored IV's fancous Steam-wave by the length of half a boller; or it might be a bilder and belief run for the whole distance; or Smoke-juck might win easy by three carriages. But the style of resign would be liable to one serious certification propose assos jockey—or some guidaman—were to play tricks with a rival's boller—or his own—by clashedmidy loosening a seriew or so? Now we know verw well that, with oranization from ing. not ever one; or over cast to played.

I have a croticet, though, that should his surboad and stem mains continue much lenger, a halfoen in the art will he to lonely and thing to live in. Like Bribetteen, he may wish everybody is, "I'll dig," and we shall go on digrang and digning till, one of these fine days, we shall have the upper crue of the earth we shall be a shall have the upper crue of the earth means of the shall have the upper crue of the earth means of the shall have the upper crue of the earth means exclusive any gave subject time I fine or fact top and had for except consectively from one often supera a grave subject time I fine or fact top and had for except consectively green, the quantity of irea siredly taken, and daily taking, out to make poof, and columns, and fences, and of stiffing for chairs and for matterness, and milrayer, and benefit of smakels! Then the millions on millions of the things conductive to the pleasure and benefit of markels! Then the millions on millions of workly its dail inside the arrived by come in the control of the same control of the control of the

Thus far into the bowels of the hard, Have we march'd on without impolament;

but things can't go on in this way for over, Tom; and the ond of it will be as I have predicted.

Thus, as if the crisis were so their brought on with sufficient rapidity by great means, it must be assisted by small. These are year and elistra-includes people, the opologistic—there they go show the opiniques and shipping, they due to be under, certainly (I mean is the vary of mindry), but avery little holps. Talking of Geology, how mostly the hast price Delay's near out of point I Kerry ann, was, and dailly our most betwee houses are sorted to their posters. Duty is beauty, I mean that is times, or rather that part of the science, which bandles young laides to call one out the pretricts things in Marrier by some of the opinion dame, to say the best which they cannot derive as idea; so that, in that respect due is, perhaps, a safer instructives for them than her loss with opinion of the contribution of the contr

Named How oddly one thought leads on to another! How world you many the present  $q_0$ ? The Ine  $h_0$  as the third is below rows! The  $h_0$  of  $h_0$  where  $h_0$  of  $h_0$  where  $h_0$  is the substitute of the  $h_0$  such that  $h_0$  is the substitute  $h_0$  is such that  $h_0$  is a positive  $h_0$  in the  $h_0$  is a positive  $h_0$  in a special point  $h_0$  in the property of the  $h_0$  in  $h_0$  is a point  $h_0$  in  $h_0$  in

It was now night—duk—and we had seen all the sights which daylight could show me. And where think you we are now? Up amongst the raw materials of which are made hall, rain, and now—enveloped in the clouds. It was a fine situation for studying Meteorology, and you may be sure I did not miss the opportunity. I have nearly completed a Weather-Almanac which I will warrant to be versu not more than nineteen times in every twenty to you see I have given Murphy the goby, and with something to spars.

It was a very nice, clean cloud, Mr. Green close for us, perfectly white, but (as I believe I have already told you) rather damp. It was so bountifully white that a cretchet took no that it must be the very material of which engels' garacters are made. If so, and one had to choose between a fleecy cloud and fleecy-boinery, I should follow the commel of my left elbow, which at this measurat whipers me for which to decide. It would be an insult to that prace cloud to think of a I neshed for at the same time with it: over the cleaner and leass

disreputable sea-fog must keep its distance. It was semi-opaque; above, beneath, and round about us; and, although it did not prevent our seeing each other with perfect distinctness, it secured to be so tightly drawn round the netting that supported the car, that had one thrust his finger through the meshes I fancied he must have made a hole in it. Ha! ha! ha!-(That is bow we write a laugh for the stage, Tom; and I have known actors so correct in their study, so scrupulous in the delivery of their taxt, that they would not give the audience a ha! more, or a ha! less than their author had fornished them with for the purpose. Care and attention in this respect are faults, however, which some actors I see are much less prone to commit than some I have seen. But lest you should imagine it is this I was laughing at, -no, no -1 will give you the laugh in its right place.)-Ha! ha! ha! It certainly did seem very old to be perched up there, like hirds in a wire-cage with a white cambric handkarchief thrown over it, suspended from the ceiling, unconscious of the slightest motion. undisturbed by the slightest sound,

Well; after some time we descended a little, leaving our nebulous curtain above us.

## But London showed another sicht-1

Now I am aware that this is mal-treating a line of one of Campbell's finest edes, but it has itself mainly to thank for it: why did it thrust itself so obtrusively and temptingly in one's way? Moral, for some young gentlemen, and here and there for a young lady-which they may deduce for themselves

It was indeed a sight-one which has rarely, very rarely, been seen by, or "within the memory of, even the oldest Balloonists." Mr. Green himself, in all his two hundred and seventy ascents, cannot number it more than (I think he said) four or five times. We certainly had been put upon short allowance of daylight for our observations, but here was a glorious compensation for that deficiency. It was quite dark. And now conceive yourself looking down on an enormous map of London, with its suburbs to the cast, north, and south, as far as the eye could reach, snawn in much or sun! For anything beyond this I must leave you to your own powers of conceiving; for, to speak frankly, my powers of describing are here at a dead halt.

A few years ago it was calculated that in moral London there were nearly twice as many gin-shops as in reprobate Paris there were coffee-houses, and half as many vendors of physic as of gin. How the account of Parisian coffee-houses may stand now, I know not; but-mark the March of Gis-tellect!-to the disgrace of our country, and of our legislature also, who if it possess the power of checking or diminishing the avil yat neglects to do so, gin-shops-(with equal regard to the refined habits of our lower and lowest classes, and to the insidious allurements concealed under pretty and pullistive names, now designated gin-palous)-gin-shops have more than doubled their number! The increase of apothecuries shops (and they, too, are many of them nicknamed "Medical Halls," "Pharmacoposian Emporiums," and so forth) seems to have maintained its fair proportion. With Gin versus Jennor (leaving Physic to an equal balance of kill and cure at the year's and) Malthus need not have been so violently alarmed about an overwhelming increase of population.

" And what put that into your head?" you will ask.

It was looking down upon those lines of fire and observing the great number of little brilliant spots of light, blue, green, purple, and erimson, with which they were variegated, each indicating a Temple of Æsculapius! Now I should not wonder at seeing, in the course of a month, that name in gilt letters over the door of some dirty little physic-shop in St. Giles's,

To tell you now of two or three pretty, marely pretty things we saw besides this, such as Greenwich by gaslight (though I don't like to throw away such a sweet alliteration) would be an anti-climax. The burning map, therefore, shall be the last scene of my pantomime. What a hint for somebody!

"The whole to conclude with,

And has been in preparation for many months, A grand, nevel, and truly unprecedented Exhibition.

TOTALLY REGARDLESS OF ALL EXPENSE, AND AT AN IMMERSE OUTLAY,

Resolved to gratify the public, and which only the umple means of this Establishment can produce. A MAP OF LONDON.

Upon an unrivalled scale of magnificence, drawn from actual measurement by the first Artists

IN BURNING FIRE !!!"

So now, Tom, we'll prepare for our descent. But our cautious coachman had taken prudential measures for this not very long after we had cleared the chimney-tops, spires, steeples, and such-like impediments. Hunds were set to work-his own being sufficiently occupied by the important care of the valve-lines-first, to unfix and take in the purple covering which, with its vellow fringes and festoons, conceals the white-wicker nakedness of the car, and gives it so snug an appearance. This being done, and the covering folded up and placed in a bag at the bottom of the carriage, the next order was to let go the grapnel, which was soon dangling at the cud of a line of a bundred, or a hundred-and-twenty feet in longth. Then, the ballast being arranged so as to be conveniently "served at the shortest notice," we were ready to descend as soon as choice or necessity might require. And, when the final descent was determined upon, "Now," inquired Mr. Green, "how much ballast have we got remaining?" -- "Oh, plenty," replied some one,-"That answer won't do : Acce much?" -- "Why, five or six bags under this seat and four or five under the other." --"That won't do: how many begs exectly, and what are their weights?" These questions having been satisfactorily answered, "Now, Mr. ---," continued Green, "be ready with a bag of ballast on your side, and you Mr. ---with one on years; and when I call you by name-but be sure you wait till you hear your own name called !-please to throw out about four pounds of ballast."-I give you these particulars, trifling though they be, first, in justice to Mr. Green, who, you will thence gather, is not the man to neglect a chance of safety even of the value of a grain of sand; and next, as letting you behind the scenes, as it were-an indulgence but seldom accorded to the spectators of the public performance, the ascent.

It was not, however, till nearly two hours after these preliminary measures had been completed that the descent was accomplished. There was little or no wind, as you will infer from the fact that at the end of a three hours' ride we found ourselves no farther than Wanatead. For nearly half an hour, the balloon, having crossed a serpentine thing about six yards long and two inches broad (the River Lea) remained almost stationary over a lime-kiln, near the junction of the Romford and Chelmsford roads, quite high enengh, though, to escape singeing. In vain did Mr. Green bob up and down, and up again, in the hope of meeting with a current that would carry us some where, the further the better; for a descent near London is never desirable (and the less so at night), as the balloon is generally followed by a numerous and mischievens rabble from the outskirts of the town. And so it happened with us. But up or down it was the same thing; there never was known a worse season for currents; so that, at each descent, there was the eternal lime-kiln beneath us, and no one seemed inclined to make that the landing-point. In vain, also, did our captain endeavour to slade the parenit of the rabble (whose shouts we distinctly heard) by hiding himself in the clouds: no sooner did we reappear than again were we saluted with their "awest voices." Wall; we could not remain up for ever; so, a convenient spot for the purpose being discovered, there we alighted in safety and with perfect casenot the slightest rebound intimating to as that we had touched ground. Should Government ever establish a line of ballcon-packets, I hope Mr. Green will be appointed to the command of the best that may be put in commission. But this they will do as matter of course; -- there is no instance upon record of their having appointed to any post or employment an inefficient person.

It was about a quarter past nine, and quite dark. Four of the party returned to town : five remained to take charge of the balloon. And here we had for companions nearly five hundred of as pleasant persons as aver made odds against five. They were composed chiefly of the veriest rabble that Stepney, Ratcliffe, Limehouse, Poplar, and the eastern outskirts of London could disgorge. "Never till now stood I in such a presence !" These disinterested gentry had followed us from their respective quarters with the amiable intention of rendering assistance, as they said; but as their assistance had not been required, their claims for payment for their disinterestedness were rejected. Our captain then ordered all hands on board—that is, that we should resume our places in the car-whilst he, in the hope of inducing our kind friends to leave us, informed them that his intention was to remain on the heath all night, preparatory to a fresh start at daylight. To discharge his balloon in their presence he dared not, for they would undoubtedly have cut it to pieces :-- not for the value of the silk and cordage, but merely as specimens for their scrap-books and albums :-- just as other collectors do sometimes tear prints ont of books in libraries, public or private, as ornaments for their own portfolics. Then came their yells, their savage imprecations, "curses both loud and deep;" their threats to destroy the balloon, an intention which I am satisfied was only not fulfilled from a difference of opinion amongst them, touching the best mode of carrying it into execution. To us these divisions in the enemies' camp (or cabinet, if you will) was a victoryfor both in camps and cabinets divisions tend to the success of the opposite party. At length, wearied by

unpediable attendance upon us, by two and fives and tons they dispersed; till, at about eleven o'vlock, we were tell the with some dozen or fiften men belonging to the neighbourhood, who were meful and civil too. And over you may understand what it was that induced my seemingly out-of-place question, touching the first Lord Turrior.

By minight the balloon was gathered in and meloid up; and within ball an hore afterwards we were earted at a confortable deal table, at a reed-size publishorous—the "Eagle and Child"—(enery upon eagle, or child either, that had buppened at that assecut to fall in the way of our hanger?)—and regulad with the best the lander and cellar affected: such bread-and-choices and also, Tenn:—Usels most exquisite achievements assisted by British's best classes, might without dishnore have defined cap to it.

Did you ever see the death, ee, rather, the killing of a ballone? To be in at the death of the "Great Names" was a fixe light, and an ample composation for the inconveniences and disconfirm just percenting; it Remember, the night was dust? Duplight would have narred the effect. There was the large measure which, has attick white, good hefer are very with one of the adaptive is not injust down to the ground. It great and greenful form stood out in bold reliaf against the sealors sky. It had drawly been crippled by the expulsion of some quantity of its breakle of life, his it was not a creation to surresorter in extreme at a larve men at the contract of the contra

And now that hope, available, and averagering creature, which had halely automished all beholders, was folded up and placed at the bottom of in own little cur, leaving still room above it sufficient to accommodate another of its own proportions! Vet in that there was nothing to wender at. Had it been self-metabled? No! Gua-puffrey—had been its units support. Tun: I quitted the ground with a noral beson in my pochet; and it were to be which that all travellers, whether by had, see, or six, were as great gainers by belt examines to place the most proportion.

I had nearly everloaked one of your quantions, which is, whather I would arise you to try a billione-trip. I would not dismostly or from it, because, with Ms. Gittar I per conduct—I any this is you with "ingold emphasia" and, let me alst, "second discretion"—the damper of the abstracts is reduced to the levent possible possible, and it was not for any condiscration incur the reversability of nationly you to emphasize whether the consequences, keyend all human still and produces to rever the remarks, must be fast. Now. I comfare the large that large plan disturbine is the disturbine in which the consequences, keyend all human still and produces to rever the remarks, must be fast. Now. I comfare that they have been disturbed in a large that the produce in the produce of the pro

We all know the fate of that poor simpleton, Cocking (see p. 164); so much for parachutes!

I was enough the thousands who now (and I need it ton) the determining of hisbanic Blanchard (Dr. July, 1815). On the evening of the 5th July, 1815, the one of the similar of the 5th July, 1815, and 1815,

Of tigre-accents the results are yet unknown, though they may easily be greesed at in the event of an accident citiest above releive. I have already callightead by use with any opinion as to the sably of ballooning: Int that poor for just to little as if may be worth; had I entertain serious doubts as to whather paradents, or even freewed, accent can be rendered serviceable to circum in any of its haraches—and coefficient in a contract of the number. Tiggra, however, have not yet been put upon their trial; so, till they have, we will give them the booff of the haraces marine of the English low.

Now, of these three exhibitions, two are both hrutal and stupid; and the best that can be said of the squib-and-cracker affair is, that, childish as it is, you get in return for the endangering of human life, a pretty

show to stare at. That is something, certainly. But don't you be induced to join any of those parties; and should your brother Dick, who is now in the commission of the peace, give the weight of his sanction to such mischisvous fooleries, oven by winking at them, he will deserve to be degraded from his trust.

But, to return—to the subject, and to town, at the same time. The "Eagle and Child" being by no means owell previded with lodging as with refreshments, only two of our party could be accommodated in the former respect; and conveyances being nowhere procurable at that late lour, shortly after one o'clock, .u., three of the "interpol acromate" (side newspapen) marched to London, where we surrived, as well as could be expected, not long after four.

I should not have noticed this occurrence but that it led to an extraordinary result. Upon my return to every, fairgined by my walk. I thus myself into an expectain and full into-what do you think-X-a-revor's I Now, though revors were formerly much in region upon operations like the present, I cannot recollect an instance of an accident of the kind beldfilling any vriter within the present century.

Well; I fell into a revoir, and (up bend still full of the hallom) I functed the hallom a stateman, and its conductor, Mr. Perdwell, a hiering, prantising pullwriter, and specif Cost to a Livory Onsolon. Feedwell infasted the Stateman with his puffs, and the Stateman presently swelled to the dimensions of a Chatham, a Fitt, a Fex.—all three in one!

Next, a Secretary of State for the ---. But, hold! I am looking out for a pension; so upon this subject not a word more even to you, Tom.

Next, a Poet:-Milton, Pope, and Dryden-Byron, Campbell, and Rogers, were each, and all together, his inferiors.

The balloon then became a Painter, and, by the aid of its gas diploma, it was presently avoiden into a Balbean—more gas, and it distended to a Titian—move gas, and move—"And now," evine the patienter, "up with you, my own-audo modern Michael Angelot" "What you have onche mate kan en," respected the painterballoon; "but keep the gas up;" for if you, allow me to sink but a foot, you'll find short commons at your next visit to ——Street,"

Next a Dramstist: and the parasite so be-Congreve'd and be-Massinger'd, so be-Sheridan'd and be-Shakspeare'd him, that I really thought the poor balleon must have burst!

Nat, a Nord-writer—"I'p we pp; Goldendith and Sterne are inveilide; Swift, Richarden, and Fiolding, dwinfeld this specks! "Higher still with me!" eries the Nord-writer; "more gas for me, my prince parasites! Force or publing, which you will; but more gas for me, more gas !"—" Up, up, up, my maparalleled balloon," ries the infator: ""In doing it for you; another puff or two and you shall have left the whole world of norealists. remaners, and noarties, immensurably below from

Here methought the smell of the gas became offensive, almost beyond outdrance, and I complained of it to Fredwell. "Excess the word," said 1, "bot it stinks; it is so coarse and strong that the stomach of a dray-horse would reject it, the whole town exidences at it."

Not so with the balloons it is my bonienes to infates," replied he; "their stoomacks are not so delicate: the stronger it is, the better they reliab it. Beisles, I do not pretend to the refined art of producing gas from myrnh, and fractaincease, and arosantic herbs, nor would they reliab it if I could: that would not elevate them a tenth part high enough to please them. No, no; coarse coal-gas is the thing for our purpose, and the coarser the better."

The next and last metamorphosis of the balleon was into a whole company of actors; and I own I wisdes newly fastly on of fi, for, now, there was considerable danger of an "awful calantity." Such a clamourit such crise of "Gast gust more gast more;" that an explosion seemed to be inevitable. I oxpressed my approhemations upon the oxbiger.

"There is less danger of such a catastropho now than ever," said the puffeter: "this balloon will swallow more gas, or, in other words, has a greater especity for distension than any of the others: cram it as you will, it never thinks itself sufficiently inflated."

"Surely," said I, "the machine is rising very sluggishly. What is its present altitude?"

<sup>\*</sup> I need not inferm you, Tom, that the substitution of the increase of gas for the diminishing of the quantity of ballast to produce the required effect, is one of those whitesical blueders to which, in decams and reversion we are subject.



Fee'dwell requested me to look at the HISTRECKORKTER which was hanging within the netting. I did so, and found it wavering between one degree below, and one degree above, the point of Metherity.

ound it wavering between one degree below, and one degree above, the point of Medicrity.

"Ay," said Foo'dwell (but rather mustering these words to himself than addressing them to me), "and.

confound it! at Medicrity it will dangle till doomsday naless I give it a puff or two."

"How high am I, my dear Fee'dwell?" cried a voice, which I recognised to be that of Mr. Horsecollar,

a second-rate comic actor.

"Between ourselves," replied the puffster, referring to the Histrionometer, "between ourselves, Mr.

Horsecollar, you stand at about Pleasant and Titlerable."
"More gas, more gas, my good, kind puffster!" cried Horsecollar; at the same time thrusting a bundle of

"More gas, more gas, my good, kind pullster!" cried Horsecollar; at the same time thrusting a playhouse orders into the hand of the "good, kind" person he was addressing.

The puffets, who dared not for his life lesse hold of his valve-los, but the gas should eccape and mashle in whole cargo to the groond, requested me to throw over a bug of ballast, one of the smallest I could find. I stooped down, and, at the bottom of the car, precisered a small number of tiny bags, varying in weight from a quarter of an once to an omne, each labelled, "Jernovers." I emptied out a quarter of an onne of this ballast, and the hallons and prepared with smaning repicity.

"Where am I now?" continued the same voice.

"Within two degrees of Listes," replied the passiver, watching the progress of the mercory and reporting accordingly, "You are now at Listes exactly-two-three-ten-twenty degrees above him."

"Brave!" said Horsecollar; "but give me a little mora gas, my dear boy."

Another little bag of ballast was discharged, the machine continued to rise, and the report was

continued: -
"Fifty degrees—all to nothing above him—and above Faucett—and Mandes—and—and—everybody else."

"More gas, more!" continued the commonant.

But be was interrupted by other claimants, the first of whom was Miss Laura Leadenlega, a dancer, Something was whispered about "in delateful lateful peck-adaptor to be given at Twinnin by Lord Gillibrough (who was greatly interested in her perfectional aferonomes), and at which she would be permitted to interdoor a friend;" and up were Miss Loadenlegs from Deteatlet to within two degrees of Teslini; I

Then came Mr. Raveaucroak (a pupil just launched of Mr. Snacks', the sioging-master). I didn't hear what be said, but from Passide, up he was carried through Templeton—Wilson—Passips—even to Rabin-mark. But the cry was still for "gas, more gas!"

Mr. Simper, the genteel, and lively-comedy-man, who stood at Medicrity, was rapidly raised above Richard
force and Lewi; and it is hard to say where he might have been carried had be not been thrust aside by Mr.
OShanarcek, the Irishman of the company.

"My darling boy, my dear duck of a fellow, what's my mark?" cried O'Shamrock.

"Your tree mark, my dear Shammy, in Vastly Pleasant, but---"

"And is it my true mark you'se after talking about? Up with me, you spalpane! Have you forgot to reminder where you're sugaged to dice next Sunday, at half-reat nine?"

The puffister requested ma to throw over a whole cance of ballast, and another, and another; and the ballcon being lightened of such a weight of JUDONINT, rose till the Histrianameter indicated ten degrees above Irish Johnston.

"Johnstone ba d-d1" cried O'Shaurock. "But np with me, my Oracle! Don't forget Sunday, my unparalleled poffeter; so up with me, and say what I am for tipping an flegant andiance, and the true coasystarce, a touch of the postels."

Out went bug after bag, and at each rise the puffater answered, "For elegant comedy you are now at Joses—and Levis—and Elisten—"

"Accept this little wooden sauff-box, my darling of the workl. It's ngly-looking enough, but it's the greatest corough; in all Europe: it belonged to St. Patrick himself! If you doubt it, I'll have it angraved on the lid, for proof. So my with me again, my critic of critics."

"Now we are passing John Palmer—and now I have puffed you op, even to Charles Kemble. Are you satisfied?"

"And is it satisfied you're after maning?" said O'Shamrock. "Och! by my shillelagh! and if you are after

going to come your 'satisfied' over me, so long as there is sky-room above me, hand me back St. Patrick's southour; and please to do me the pleasure not to dine with me next Senday at half-past nine, you niggardly suplanar."

Lastly came Mr. Daggerbowl, the tragedian. What was his standing-point I did not observe; but having discharged analog of the little bags, the Bistrionometer indicated first, Cherler Yorey, then Jour Kenner! I trendbel for our safety, for this was a Surfab height to transbe from 1

"Higher, higher!" eried Daggerbowl. "What am I now, my profound?"

"And Garrick," responded the parasito, referring to the indicator.

"That won't do for me, my deep-searching puffster: higher, more gas, higher!"

"Ay, ay, sir, np we go!"

"What am I soe, my widely-grasping and all-embracing puffetor?"

"And Mossey," replied the parasite:—up we go!—And Barry—up we go!—And Batterton. Now we are at

Surparing !—now at Transcendent!—now at Neuropyronchel!—and new at Unapproachable-and-neur-in-thir-need-tote-qualid! Arm you minfood, O super-human, O Howen-in-spired Daggarbowl?

"Higher, good pufficte! Higher still, dear parasite!" cried Daggarbowl.

Here the whole company was saired with the season of jackney, such advining to be carried as high  $(\sigma_i)$  in the language of the earth, to be as weap-surjectly plopsful by Mr. Dagerdow-II for irrect out "Higher I" - More gas for  $m^{-1} = \lambda a l c m^{-1} = \lambda a l c m^{-1}$  and  $m^{-1} = \lambda a l c^{-1}$  are doubting. But the lost ticy bag of zerosurza having bower classical, the suit possible for the said III elling parasite to comply with their channels.  $P_{init}(p) = \lambda a l^{-1}$  and  $p^{-1} = \lambda a$ 

And is it possible, thought 1, that a high-mixed balloon, whether in the form of Post or Player, or any other of a pallow of little of sourgine, one and depute holf of a to place in whether he in the hands of one who, at the both, an give in let a nanaparay alvestion, if manufacted, as, at the want, whether in exprise or and/or, at the both, angive in let a nanaparay alvestion, if manufacted, as, at the want, whether in exprise or and/or, though the map is made for a white to struct with warder at pure function is expressed to the place lost high in air, yet sooner or later will reduction cases to his aid, and remind him that there you are supported only by an convertagage of gas, making and the law size yet by yearpeds, and, depoirs per prantitial inflates, place you at your jest point of electrican—entire allowing you to rise much above, are to with much below it. Bullionson, them all of which he be bright, a world in the final property on the designating has historest, upon

which relying and of which to be derect, you wait ant, tait, tait, a thing for mockety and scorn.

Scarcely had I concluded this reflection, when Mr. Prance (with a smile of good-humoured contempt) just blowing apon the balloon, the monstreas habite burst with so load a report that, &c. &c.

And now, my doar Tom, having only to add that (with all proper regard for the revenue) this long, rambling epistle being [not] "O Met Majardy's Service," you will receive it, as such, under an official frank. I conclude by subscribing myself

One of Edgar Poe's imaginative Tales well deserves a place in this chapter, it is entitled-

"THE UNPARABLELED ADVENTURE OF HARS PEASAL."
With a heart of furious fonces,

Whereof I am ostumateler, With a burning spear, and a horse of air,

To the wilderness I wander.

Tom o' Bedlam's Song

By late accounts from Rotterdam, that city seems to be in a high state of philosophical excitement. Indeed, phonomena have there occurred of a nature so completely nacespected, so entirely novel, so niterly at variance

with precenceived opinions, as to leave no doubt on my mind that long ere this all Europe is in an uproar, all physics in a ferment, all reason and astronomy together by the ears.

It appears that on the —— day of —— (I am not positive about the dar), a vaic evowd of people, for majores not specifically southened, were semiled in the post specific of the "discontinuous of the

The origin of this bubbles own became afficiently evident. From behind the large both of one of those hardy-pictured measure of flowed arrow posterious, was excit advery to energe into an open ran of these open, or quere, betraeprotect, but approximately solid solutions, no collep skeptle, as whitesidely not together, as not to be in measured below. When could be the contract of the mostly, and, maintaining as eye sould prome to a man, replaced the pipe correlley in the corner of the mostly, and, maintaining as eye sould prome to a man, replaced the pipe correlley in the corner of the mostly, and, maintaining as eye sould prome the distribution of the contract of the mostly, and, maintaining as eye sould prome to grant significantly—their significant contracts.

In the mean time, however, lower and still lower towards the goodly city, came the object of so much curiosity, and the cause of so much amoke. In a very few minutes it arrived near enough to be accurately discerned. It appeared to be-ver! it was padoubtedly a species of balloon; but surely no such balloon had ever boan seen in Rotterdam before. For who, let me ask, ever heard of a balloon manufactured antirely of dirty newspapers? No man in Holland, certainly; yet hero, under the very noses of the people, or rather at some distance after their noses, was the identical thing in question, and composed-I have it on the best authority-of the precise material which no one had over before known to be used for a similar purpose. It was an egregious insult to the good sense of the burghers of Rotterdam. As to the shape of the phenomenon, it was oven still more reprehensible, being little or nothing better than a huge fool's-cap turned upside down. And this similitude was regarded as by no means lessened, when, upon nearer impection, the crowd saw a large tassel depending from its arex, and, around the upper rim or base of the cone, n circle of little instruments, resembling sheep-hells, which bent up a continual tinkling to the tune of Betty Martin. But atill weres suspended by blue ribbons to the end of this fantastic machine, there hung, by way of car, an enormous drab beaver hat, with a hrim superlatively broad, and a hemispherical crown with a black band and a silver backle. It is, however, somewhat remarkable that many citizens of Rotterdam swore to having seen the same hat repeatedly before; and, indeed, the whole assembly seemed to regard it with eyes of familiarity; whiln the vrow Grettel Pfaell upon sight of it attered as exclamation of joyful surprise, and declared it to be the identical but of her good man himself. New this was a circumstance the more to be observed, as Pfaall, with three companions, had actually disappeared from Botterdam about five years before, in a very sudden and unaccountable manner, and up to the date of this narrative all attempts at obtaining intelligence concerning them had failed. To be sure, some bones, which were thought to be human, mixed up with a quantity of odd-looking rubbish, had been lately discovered in a retired situation to the east of the city; and some people went so far as to imagine that in this spot a foul murder had been committed, and that the sufferers were in all probability Hans Pfsall and his associates. But to return,

The hallon (for such no doubt, it was) had now descended to within a hashed feet of the sorth, alleving the crowle below a sufficiently allering to we fix person of its occupant. The was in term is a very simplex bely. He could not have been more than we foul in height; but this dilution, little as it was, would have been sufficient to distry the equilibration, and that have set beed got white just per, in of the information of a circular rine reaching as high as the breast, and rigged to to the cords of the hallons. The body of the little man was must have properfundly bread; giving he has surine figure a resolutive judyly shear? He first eff owers, could be not be seen at all. His fands were commonly large. His hair was gury, and collected lines a grow behind. His user was profitionally sing, crossed, and influentatory is key careful. Hirdlings, and assets, is their and eclosed, although writided with age, were book, parly, and double; but of earn of any third there was not a smillance to be discovered upon any persion of his local. This odd litting gentlenn was dermost in local nearest article, which was seen to the profit of the local of the state of the some stretch of hybrid was sain, with fight brevelves to match, fastened with although backets at the locae. His was was ones height sain, which state flatfor you are in justicely and the local of his local; and, to complete the equipment, all blood with handless of the large and the complete for equipment, and blood well with handless of the local and the local of the local of the local and the local of the

Having descended, as I said before, to about one hundred feet from the surface of the earth, the little old gentleman was suddenly seized with a fit of trepidation, and appeared disinclined to make any nearer approach to terre firms. Throwing out, therefore, a quantity of sand from a canvas bag, which he lifted with great difficulty, he became stationary in an instant. He then proceeded, in a hurried and agitated manner, to extract from a side pocket in his surrout a large morecon pocket-book. This he poised suspiciously in his hand; then eyed it with an air of extreme amprise, and was evidently astonished at its weight. He at length opened it, and, drawing therefrom a huge letter scaled with red scalingwax, and tied carefully with red tape, let it fall precisely at the feet of the burgomaster Superbus Von Underdnk. His Excellency stooped to take it up. But the aeronaut, still greatly discomposed, and having apparently no further business to detain him in Hotterdam, began at this moment to make husy preparations for departure; and it being necessary to discharge a portion of ballast to anable him to reascend, the half dozen bags which ha threw out, one after another, without taking the trouble to empty their contents, tumbled, avery one of them, most annotametry, apon the back of the burgumaster, and rolled him over and over no less than half-a-dozen times, in the face of every individual in Rotterdam. It is not to be supposed, however, that the great Underduk suffered this impertinence on the part of the little old man to pass off with impunity. It is said, on the contrary, that during each of his half-dozen circumvolutions he smitted no less than half a dozen distinct and furious whiffs from his pipe, to which he held fast the whole time with all his might, and to which he intends helding fast-God willing-until the day of his decease

In the mean time the balloon areas like a lark, and, easing for a way above the city, at length stirled quietly behind a cloud institute to that from which it had as oddly concept, and was the last for ever to the woodering cays of the good citizens of theirestime. All straights was now directed to the letter, the descent of which, and the conceptances intering theretyme, had proved a faulty advantage of both primes and growned signity to that the conceptances intering the regards of the prime and growned signity to the better as thought upon the important object of secretary the epiths, which was seen, upon important so, better a thought spot the important object of secretary the epiths, which was seen, upon important so, better allowed in the object of the contract of t

To their Excellencies Von Underdah and Robadob, Provident and Vice-President of the States' College of Astronomers, in the City of Reterritors.

Vour Excellencies may, perhaps, he also to rescender an humble artient, by same Han Hanl, and processpation in network of Relieve, who, with three others, dispersard from Richtenha, about fave years ago, in a manner which must have been considered unaccusstable. If, however, it so please your Excellencies, I the source of the communication, and the detected liber Findli limited. It is well known to must of up followed inviters of this communication, and the detected liber Findli limited. It is well known to must of up followed larly called Somethica, in which I resided at the time of up dispersarence. Sy monoton have also meided therein time out of mind—they, as well as myreld stendily disloving the respectable, and, indeed, hereinty-ordination of encoding of bellower, for top-such tereth, usual dates years, that the head of all the people have been set engree with publicle, no better business than any own could an homost critical of Richtellans sider desire to the contraction of the co

of inhibited and the spirit of the age. If a fav wande finning, it could residily be finned with a nowegaper; and, as the Governance of sow values, I have no solo that bathers are into exquired durability in properties, for, in a very short time, there was not a pair of believe in all Battenban that ever stood in need of a sitche, or required the assistance of a lammer. This was a state of things not to be endered. I now give a poor as an it, and having a wife and shiften to provide for, my harden as length because instrictable, and I quest hour after lowe in reflecting spote the most convariant models of parting an ode to put fig. Dama, in the most loss, then belief intense for contemplation. My house was intensally about any door, and theretening no strictable, when the provide the provide of the provide of the morning till night. There were three follows in particular, when varied on beyond evidences, beying which continuitly about any door, and theretening no with the low. Upon these three I wound the bitterest revenue, I ever I should be no largey as in get them within a particular of the contract of the providence of the p

One day, having given them the slip, and feeling more than usually dejected, I continued for a long time to wander about the most obscure streets without object, until at length I chanced to atumbla against the corner of a booksellor's stall. Seeing a chair close at hand for the use of customers, I threw myself deggedly into it, and, hardly knowing why, opened the pages of the first volume which came within my reach. It proved to be a small pamphlet treatise on Speculative Astronomy, written either by Professor Encke, of Berlin, or by a Frenchman of somewhat similar name. I had some little tincture of information on matters of this nature, and soon became more and more absorbed in the contents of the book-reading it actually through twice before I awoke to a recollection of what was passing around me. By this time it began to grow dark, and I directed my steps towards home. But the treatise (in conjunction with a discovery in programmics, lately communicated to me as an important secret by a consin from Nants) had made on indelible impression on my mind; ned, as I sauntered along the dusky streets, I revolved carefully over in my memory the wild, and sometimes unintelligible, reasonings of the writer. There are some particular passages which affected my imagination in an extraordinary manner. The longer I meditated upon these, the more intense grew the interest which had been excited within me, The limited nature of my education in general, and more especially my ignorance on subjects connected with natural philosophy, so far from rendering me diffident of my own ability to comprehend what I had read, or inducing me to mistrust the many vagua notions which had arisen in consequence, morely served as a further stimulus to imagination; and I was vain enough, or, perhaps, reasonable enough, to doubt whether those crude ideas which, arising in ill-regulated minds, have all the appearance, may not often in effect possess all the force, the reality, and other inherent properties of instinct or intuition.

It was late when I reached boson, and I wast immediately to bod. My mind, bowerer, was too much compiled to sheep, and I lay the whole sight boried in mediations. Arriage andy in the meming, I repetited asportly to the booksellow's still, and hald set what little rowly maney I possessed in the purchase of some volume of Mechanics and Parcellad Autonomy. Harm garried a house addry with these, I develoud every paras means to their personal, and soon made and preferency in studies of this nature as I thought reflicient for the ascentine of a certain design with which either the activity may be the prefer to be preferred in the internal of the preferred in the revery conference to conclinise the force receiving which had given use to much unarguster. In his period I made very conference to conclinise the force receiving who had given use to much unarguster. In this period is the latter principle which there are the proper which I take the principle which the latter principle which the latter is true.

By those means (for they were ignorant most) I found little difficulty in gaining the mover to my prapers.

Matter being the arranged, I contrived, by the add case wite, and with the greatest energy and cantion, to dispose of what property I had remaining, and to berrow in real mean, under various perstences, and without a dispose of what property I had remaining, and to berrow in real mean, make traveles perstences, and without priving any attention, I man admost to any, to my fixture means of representation in inconditionable quantity of early means. With the means that executing I proceeded to procease, it altered, another mind to two two persons on the contribution of the varieties of constitution, and a proper of the contribution of contributions of the contribution of contributions of the contributions of the particular models of proceeding. In the means that I worked up the twice in active of definitions of an attention as to the particular model of proceeding. In the means that I worked up the twine interest extent of definitions.

dimensions, rigged it with a boop and the necessary cords, and made purchase of numerous instruments and materials for experiment in the upper regions of the upper atmosphere. I then took epportunities of conveying by night, to a retired situation east of Botterdam, five iron-bound casks, to contain about fifty gallous each, and one of a larger size; six tin tubes, three inches in diameter, properly shaped, and ten feet in length; a quantity of a particular metallic calculance, or semi-metal, which I shall not name, and a dozen demiliohns of a very common acid. The gas to be formed from these latter materials is a gas never yet generated by any other person than myself, er, at least never applied to any similar surpose. I can only vesture to say bere, that it is a contituent of acute, so long considered irreducible, and that its density is about 37-4 times less than that of hydrogen. It is tasteless, but not odeurless; burns, when pure, with a greenish fiame, and instantaneously fatal to animal life. Its full secret I would make no difficulty in disclosing, but that it of right belongs, as I have before hinted, to a citizen of Nantes, in France, by whom it was conditionally communicated to myself. The same individual submitted to me, without being at all aware of my intentious, a method of constructing balloons from the membrane of a certain animal, through which substance any escape of gas was nearly an impossibility. I found it, however, altogether too expensive, and was not sure, upon the whole, whether cambric muslin, with a coating of gum-caoutchouc, was not equally as good. I mention this eircumstance, because I think it probable that hereafter the individual in question may attempt a balloon ascension with the novel gas and material I have spoken of, and I do not wish to deprive him of the honour of a very singular invention,

On the tweet which I introduced each of the smaller coals to occupy respectively during the Hudsion of the ballow, I privately by a small hole, it has bole forming in this manner a crite tweety-five for in diameter. In the centre of this circle, being the aution designed for the large such. I also day a hole of prestar depth. In each of the few number has been depended a central consistent of the constant and the present of the conbined and fifty provide, of cannon-powder. These—the large and the analysis—one can keep belling on which ceremit brains, and having be that one of the cantion tens and the fact for the first darks much, I correct with ceremit brains, and having be that one of the cantion tens and the fact for the first darks much, I correct which leaves the condition of the contract of the contraction of the contraction of the violet leaves the cash. I then filled up the remaining hole, and placed the hardies over from in their desiration.

Beakin the articles above summerated, I conveyed to the  $\delta p_{\rm c}^{\rm i} A_{\rm c}$  and there seemed, one of M. Griman's improvements upon the sportness for condensation of the strougherie six I. Found this suchine, kewere, i.e. require considerable alternation before it could be adapted to the purposes to which I intended making it applicable. But with a serves bound and transmitting personements, I alt negation with the affirm some in this propagationary. My latinow was some completed. It would contain more than feity thousand colde feet of  $p_{\rm c}$ ; would take me up easily, I calculated, with all up implements, of all I managed rightly, with our hundred and wretty-free produce of ballate into the largeis. It had received three costs of variois, and I found the cachine mention to answer all the purpose of sills found their largeing with some gas and the carbon surface and the purpose of sills found their largeing with some gas and the purpose of sills found their largeing with some gas and produce the serogenity.

Everything being now ready, I exacted from my wife as eath of accretey in relation to all my rections from the old or got of rection to the obsoluted result and promising on my part, in return as sown accremations would permit. I given her what little money I hed bits, and hole her farewell. Indeed, I had not not be received. It believe, in both the profile of in solidar sowns, and each images matters in the world without my assistance. It believe, in both the result, who always below to make a many interest makes explain a solidar solidary in the contraction of the profile of the contraction of

It was the first of April. The night, as I sold before, was durly, there was not a size to be seen; and a circular junit, filling a internal, rendered as every escenderable. But sy order instally was conceiving the ballows, which, is spite of the variable with which it was defended, began to gove rether leavy with the monitors; the powerf also was indice to along. I therefore have before the government with perfect the sold in the other. They did not conse, lowever, importancing now the questions at the size of its stude of the which all this appraish, and expressed made dissufficient at the turrible bloom? I made then nothery. They could not previous (so they said) what good was likely to coval from their printing was to the ads, movely to this apert in which indicated in constituents. I began with high you could not be reprint spite to the ads, movely to the spit and we have finested them.

to get meny, and worked away with all my might, for I verily believe the isless supposed that I had estered into a compact with the dort), and that, is drest, what I was now doing was nothing better than it should be I was, therefore, in great fine of their lawing no absorptive. I contrived, however, to posity them by promise of preparent of all cores in full, as now as I could bring the present unitasies no termination. To these species, they great, of course, their own interpretation, inscript, no bothet, that and events I should come into possession they great out the state of the deline services, I down a type cared over this bush becomes of deline was not any or stress on consideration of

In about four hours and a half I found the hallow entitiently inflated. I attached the our, therefore, and yould ally implements in time-atterous; a homosculer, with some important modifications; a charmoneter; an electrometer; a company; a magnetic needle; a second watch; a bell; a specking-trompt, do. do. do;; also a glight of glian; chanded of six, and actefully doned with a support; and forging in per consisting apparatus. glight of glian; chanded of six, and actefully doned with a support; and forging in the consisting apparatus.

It was now nearly daybrank, and I thought it high it into to take my departure. Droppings Righted degree on the ground, at if you delicant, I took the opportunity, in storogine to plot it my of glighting privately the piece of sub-manch, the cold of which, as I said before, portrolled a little beyond the lower rise of one of the smaller casks. This answers was needly superceived on the part of the three dams; and, jumping into the ext., I insachidately out the single cord which itself as to the certificated was pleased to find that I also a special order and one result free prompting corrections of schools ballant, and due to have certified und as results of the control of schools ballant, and due to have certified upon as many more. As I left the earth, the harometer stood at thirty feebes, and the centigride thermometer at 15°.

Scarcely, however, had I attained the height of fifty yards when, rearing and rumbling no after me in the most tumultuous and terrible manner, came so dense a burricane of fire, and gravel, and burning wood, and blaxing metal, and mangled limbs, that my very heart sunk within me, and I fell down in the bottom of the car, trembling with torror. Indeed, I now perceived that I had entirely overdone the business, and that the main consequences of the shock were yet to be experienced. Accordingly in less than a second, I felt all the blood in my body rushing to my temples, and, immediately thereupon, a concussion, which I shall never forget, burst sbruptly through the night, and secued to rip the very firmament asunder. When I afterwards had time for reflection, I did not fail to attribute the extreme violence of the explosion as regarded myself, to its proper causemy situation directly above it, and in the line of its greatest power. But at the time I thought only of preserving my life. The balloon of first collapsed, theo furiously expanded, then whirled round and round with siekening velocity, and finally, recling and stangering like a drunken man, burled me over the rim of the car, and left me dangling, at a terrific height, with my head downward, and my face outward, by a piece of stender cord about three feet in length, which hang accidentally through a crevice near the bottom of the wickerwork, and in which, as I fell, my left foot became most providentially entangled. It is impossible-uterly impossible-to form any adequate idea of the horror of my situation. I gasped convulsively for breath-a shudder resembling a fit of the ague agitated every nerve and muscle in my frame-I felt my eyes starting from their sockets-a horrible names overwhelmed me-and at length I lost all consciousness in a swoon.

How long I remained in this state it is impossible to say. It must, herever, have been to inconsiderable time, for what I partially recovered the ensure of existence, I fained the sky hraviling, the lation at a possible height over a witherness of coors, and not a trace of land to be discovered for and wide within the limits of the state bear. By the contract incovering, mere the state of the lation of the state bear. By the contract incovering the state of the state o

glimmer through my mind. But, strange to say, I was neither astonished nor horror-stricken. If I felt any emotion at all, it was a kind of chuckling satisfaction at the eleverness I was about to display in extricating myself from this dilemma; and never for a moment did I look upon my ultimate safety as a question susceptible. of doubt. For a few minutes I remained wrapped in the profoundest meditation. I have a distinct receilection of frequently corepressing my lips, putting my forefinger to the side of my nose, and making use of other gestigulations and grimaces common to men who, at ease in their erm-chairs, meditate upon matters of intricacy or importance. Having as I thought, sufficiently collected my ideas, I now, with great cantion and deliberation. put my hands behind my back, and unfastened the large iron buckle which belonged to the waisthand of my pantaloons. This buckle had three teeth, which, being somewhat rusty, turned with great difficulty on their axis. I brought them, however, after some trouble, at right angles to the body of the backle, and was glad to find them remain firm in that position. Holding within my teeth the instrument thus obtained, I new proceeded to matic the knot of my cravat. I had to rest several times before I could accomplish this manusuvre; but it was at length accomplished. To one end of the cravat I then made fast the buckle, and the other end I tied, for greater security, tightly round my wrist. Drawing now my body apwards, with a prodigious exertion of muscular force I succeeded, at the very first trial, in throwing the huckle over the car, and entangling it, as I had anticipated, in the circular rim of the wickerwork.

My body was now inclined towards the side of the ear, at an angle of about forty-five degrees; but it must not be understood that I was therefore only forty-five degrees below the perpendicular. So far from it, I still lay nearly level with the plane of the horizon; for the change of situation which I had acquired had forced the bottom of the car considerably untword from my position, which was accordingly one of the most imminent peril. It should be remembered, however, that when I fell, in the first instance, from the car, if I had fallen with my face turned towards the balloon, instead of turned outwardly from it, as it actually was-or if, in the second place, the cord by which I was suspended had chanced to hang over the upper edge, instead of through a crevice near the bottom of the car-1 say it may readily be conceived that, in either of those supposed cases, I should have been unable to accomplish even as much as I had now accomplished, and the disclosures now made would have been utterly lost to nosterity. I had therefore every reason to be grateful; although, in point of fact, I was still too stopid to be anything at all, and hong for perhaps a quarter of an hour in that extraordinary manner, without making the elightest further exertion, and in a singularly tranquil state of idiotic enjoyment. But this feeling did not fail to die rapidly away, and thereunto succeeded horror and disnay, and a sense of utter helplessness and ruin. In fact, the blood so long acommulating in the vessels of my head and throat, and which had hitherto bueyed up my spirits with doliriom, had now begun to retire within their proper channels, and the distinctness which was thus added to my perception of the danger merely served to deprive me of the self-possession and the courage to encounter it. But this weakness was, luckily for me, of no very leng duration. In good time came to my rescue the spirit of despair, and, with frantie cries and atraggles, I jorked my way bodily apwards, till, at length, clutching with a vice-like grip the long-desired rim, I writhed my person over it, and fall headlong and shuddering within the car.

It was not unif own time afterwards that I received myself sufficiently to attend to the ordinary cases of the billion. I then, however, examined by with statesties, and bond it, to my great series (in nighest, by implements were all safe, and, formutally, I had but suther binduct not provisions. Indeed, I had no well formulated to the state of the quarter mine. Immediately beausth me in the cosmol kys a small black algebr, eligibly solong in shape, seemingly about the size of a densition, and in every respect beausing a cent as remainbase to one of these types. The state of the stat

It is now high times that I should acaplain to your Excellencies the object of my voyage. Your Excellencies will bear in mind that distressed circumstances in Rotterdam had at length driven see to the resolution of committing assiells. It was not, however, that to life itself I had any positive disquest, but that I was harmased beyond enhances by the adventitions miseries attending my situation. In this state of mind, whiching to live, yet wearied with life, the treations at the shall of the looked-lier, backed by the apportune discovery of my course of Nantz.

opened a resource to my inaspination. I then finally made up my mink. I determined to depart, yet livraleave the world, yet continue to exist—in short, to drop azigman, I resolved, let what would ensue, to force a penage, if I could, to the snow. Now, ket I should be supposed more of a mediana than I actually san, I will detail, as well as I am able, the considerations which to me to believe that an achievement of this nature, although without doubt difficial and full of dauger, was not absolutely, to a bold spirit, brought due confines of the possible.

The soon's send distance from the earth was the first blage to be attended to. Now, the soon or a varage interest between the roots of the two photos in 2004 of the centre of question and or good polar 227,000 miles. In yet the zon or exceepe interest, I but it must be borns in mind, that the firms of the mone's centre being an eligible of occurring to meaning to not be and notified with one specialisated the clinic benefit and the earth's contract being and make in the form could be a superior of the contract being and the contract being an extend in her now, say 1000, in all 2000, leaving an actual interval to be traversed, under avange circumstances, of 22(500 mins.). Now that, in reflect, an ance very extractivity distance. Travelling on the hand has been repeatedly accomplished at the rate of sixty salls up to have, said, indeed, a much genter speed any be antispensed; but even at the velocity, it would also me no more than 10 days it reach the surface of the now. There were, however, most perfective independing and is believe that when even rate of the very large and the first hand we destruct the contract and the contract being and provided the contract and the contract of the contract being and the first hand we destruct the contract and the contract an

The next point to be regarded was one of far greater importance. From indications afforded by the barometer, we find that, in ascensions from the surface of the earth, we have, at the height of 1000 feet, left below ns about one-thirtieth of the entire mass of atmospheric air; that at 10,600, we have accorded through nearly one-third; and that at 18,000, which is not far from the clavation of Cotopaxi, we have surmounted one-half the material, er, at all evants, one-half the posterotic body of air incumbent upon our globe. It is also calculated that at an altitude not exceeding the hundredth part of the earth's diameter-that is, not exceeding eighty miles-the rarefaction would be so excessive that animal life could in no manner be sustained, and, moreover, that the most delicate means we possess of ascertaining the presence of the atmosphere would be inadequate to assure us of its existence. But I did not fail to perceive that these latter calculations are founded altogether on our experimental knewledge of the properties of air, and the mechanical laws regulating its dilution and compression, in what may be called, comparatively speaking, the immediate vicinity of the earth itself; and, at the same time, it is taken for granted that animal life is and must be essentially isoupple of modification at any given nucltainable distance from the surface. Now, all such reasoning and from such data, must of course be simply analogical. The greatest height over reached by man was that of 25,000 feet, attained in the aeronantic expedition of Messieurs Gay-Lussac and Biot. This is a moderate altitude, oven when compared with the eighty miles in question; and I could not help thinking that the subject admitted room for doubt and great latitude for speculation

But, in point of fact, an accession being made to any given altitude, the ponderable quantity of air surmometal and parties ascension is by no means in proporties to the additional haight accended, as may be plainly seen from what has been stated before, but in a rais constantly decreasing. It is therefore evident that, accends as high as we may, we cannet, literally speaking, series of a limit beyond which we atmosphere in to be found. It sunt exist, I argued; although its one exist in a state of infinite rarefrections.

On the other hand, I was ware that arguments have no been wanting to prove the existence of a real and definite limit to the subsepare, keyend with there is absolved by an it hadacover. But a circumstance which has been left out of view by those who catered for such a limit, neemed to me, although no positive refinition of their crose, all it points verify very reviews investigation. On comparing the intravels between the measures arrival or Euclidean of the contravel of the planet, it species that the protion are presided planning; that is to say, the major axis of the count's ellipse is growing their in, is a love but periody regular devenue, Nov., this is major axis of the count's ellipse is growing their in, is a love but periody regular devenue, Nov., this is major axis of the count's ellipse is growing their in, is a love but periody regular devenue, Nov., this is major axis of the count's ellipse is growing their in, is a love but periody regular devenue, Nov., this is considered to the contradiction of the country of

block, there is no other very of accounting for the virtation in question. But again: The real dimenter of the same occuries challenging is observed to contract paighty at a payanches the east, and different towards its aphidion. Was I not justifiable in supposing, with M. Valt, that this apparent condensation of channes but origin in the compression of the same othered medium I have specked to felera, and which is dense in proportion in the sizes of the same of the problem of the ferral medium. The same contract of the contract points of the same of the same of the same verthey of statement. This indicates an opposed in the ferral points of the same operation in the driven of the same operation of the same vertical of statement. The indicates on opposed in the same of the same operation operation of the same operation ope

Having adopted this view of the subject, I had little further hesistation. Greating that on my passage I haddle most with anappier constript from mon as at the surface of the earth, I executed that, by means of the very legation apparatus of 31, Grimm, I housid readily be marked to contense it is sufficient to the purpose of respiration. This words recover the clief closies in a jummy to the moon. I had, Induct be purpose of respiration. This words recover the clief closies in a jummy to the moon. I had, Induct the purpose of respiration. The content had become the purpose of the purp

It is true that balloons, in the first stage of their ascensions from the earth, are known to rise with a velocity comparatively moderate. New, the power of elevation lies altogether in the experior gravity of the atmospheric air compared with the gas in the balloon; and, at first sight, it does not appear probable that, as the balloon acquires altitude, and consequently arrives successively in atmospheric strata of densities rapidly diminishing-1 say, it does not appear at all reasonable that, in this its progress upward, the original velocity should be accelerated. On the other hand, I was not aware that, in any recorded assension, a dissination had been proved to be apparent in the absolute rate of ascent; although such should have been the case, if on account of nothing else, on account of the escape of gas through balloons ill constructed, and varuished with no better material than the ordinary varnish. It seemed, therefore, that the effect of such escape was only sufficient to counterbalance thu effect of the acceleration attained in the diminishing of the balloon's distance from the gravitating centre. I now considered that, provided in my passage I found the median I had imagined, and provided it should prove to be escentially what we denominate atmospheric air, it could make comparatively little difference at what extreme state of rarefaction I should discover it - that is to say, in regard to my power of ascending; for the gas in the balloon would not only be itself subject to similar rarefaction (in proportion to the occurrence of which, I could anffer an escape of so much as would be requisite to prevent explosion), but, being other if mar, would, at all events, continuo specifically lighter than any compound whatever of mere nitrogen and oxygen. Thus there was a chance-in fact, there was a strong probability—that, at no speek of my arent, I should reach a point where the united weights of my immense ballow, the inconceivably rare gas within it, the our, and its contents, should equal the weight of the snaw of the surrounding atmosphere displaced; and this will be readily understood as the sole condition upon which my neward flight would be arrested. But, if this point were even attained, I could dispense with ballast and other weight to the amount of nearly 300 neurals. In the mean time, the force of gravitation would be constantly diminishing in proportion to the squares of the distances, and so, with a velocity prodigiously accelerating, I should at length arrive in those distant regions where the force of the earth's attraction would be superseded by that of the moon

There was another difficulty, however, which consistend me some little disputcteds: It has been observed, that, in hallons assembles no any considerable height, busides the pain statending reprinting, great uneasises is experienced about the head and body, often accompanied with bleeling at the now, and other symptoms of an attaining kind, and growing more and more inconvenient in proportion to the distinct statissel. This was

<sup>•</sup> The solited light is probably what the anxievia called Trobe.
Green, of Nason bellow notwicty, and other has accounts, dony Ensient Trobe you door arount. Princy, like 2, p. 30.
Fine the original publication of Hann Phall, I find that M.
Since the original publication of Hann Phall, I find that M.

a reflection of a nature oncewhal starting. Was it not probable that these symptoms would increase multiterminated by deads in fault? I finally thought sort. Their origins was to be looked for it to be progressive research of the restampy atmospheric preserves upon the surfaces of the body, and consequent distortions of the superficial where the stamphetic cleanity is descored, projection for the date researches of blood in a vertical of the boat. Variety of the surface of the surfaces of the board of deskell of this renovation, I could see no reason, therefore, why life could not be sustained even in a cancer; for the superior and compression of debas, commonly called bracking is notice purely numerical, and the case, nor the spring of respiration. In a word, I conscribed that in the body should become holistance in the constraint, I replied with conditions more than the surface of the constraint, and the surface of the constraint, and the constraint of the surface of the su

Thus, may it please your Excellencies, I have detailed seam, though by no means all, the considerations which lad not to form the preject of a lumar veryage. I shall now proceed to lay before you the result of an attempt so apparently andactions in conception, and, at all events, so unterly unparalleled in the annals of maskind.

It wing attained the allithis before mutationed—that is to any, three miles and three quarter—flavor out from the ear  $\alpha$  quartity of fathers, and for that it still exceed with sufficient applicity, there was therefore, no necessity for discharging any hallost. I was glad of this, for I wished to retain with no as much weight as I could carry, for the elevient renor that I could not the propriet related to retain with the as an end weight as I could carry from the elevient near that I could not be a propriet related by the great freedom, and feeling no pulsa whatever in the book. The cut was lifty revy denourly span great, which I take that effect of the propriet great propriet propriet propriet great propriet propriet propriet great propriet propriet propriet great propriet great propriet propriet great propriet great propriet great propriet great gr

At twoiry missive past six violes, the horosouré aboved an elevation of 50,00 feet, or few miles to a fraction. The propert encount unbounded. Indeed, it is very casel questionties, by means of a physical generatry, but great an extent of the south's area I bolsels. The correct sortion of may generate of a spice in it, is the entire sortion of the applicat folial and the transition of the segment to the dimensior of the applica. Now, in more case, the sortion of the applicat of sight above the surface. "As for miles, then, to eight thousand," would express the propertion of the extra few see once plus. In other words, I bolded as much as a sixten-bandwith part of the whole surface of the globe. The see appeared nurshful or a mirror, although, by means of the telescope, I could preserve it to be in a state of velocitate against. The ship was to longer visible, heaving feller sortion, appearantly, to the outward. I now longs to despirate, as interes, although the past in the last, expressly when

At twenty minutes before seven, the balloon cutered a long series of dense cloud, which put me to great trouble, by damaging my condensing apparatus, and wetting me to the skin. This was, to be sure, a singular reasoner, for I had not believed it possible that a cloud of this nature could be sustained at so great an slevation. I thought it best, however, to throw out two five-pound pieces of ballast, reserving still a weight of one hundred and sixty-five pounds. Upon so doing I soon rose above the difficulty, and porceived immediately that I had obtained a great increase in my rate of ascent. In a few seconds after my leaving the cloud, a flash of vivid lightning shot from one end of it to the other, and caused it to kindle up, throughout its wast extent, like a mass of ignited charcoal. This, it must be remembered, was in the broad light of day. No fancy may picture the sublimity which might have been exhibited by a similar phenomenon taking place during the darkness of the night. Hell itself might then have found a fitting image. Even as it was, my hair stood on end, while I gazed afar down within the yawning abyses, letting imagination descend, and stalk about in the strange vaulted halls, and ruddy gulfs, and red glastly chains of the hideous and unfathomable fire. I had indeed made a narrow escape. Had the balloon remained a very short time longer within the cloud-that is to say, had not the inconvenience of getting wet determined ms to discharge the ballast-my destruction might, and probably would, have been the consequence. Such perils, although little considered, are perhaps the greatest which must be aucountered in balloons. I had by this time, however, attained too great an elevation to be any longer measy on this head.

I was now rising rapidly, and by seven o'clock the barometer indicated an altitude of no less than nine miles

and a half. I began to find great difficulty in drawing my breath. My head, too, was excessively painful; and, having felt for some time a moisture about my cheeks, I at length discovered it to be blood, which was soming quite fast from the drums of my cars. My eyes, also, gave me great uncasiness. Upon passing the hand over them they scened to have protruded from their sockets in no inconsiderable degree; and all objects in the car, and even the balloon itself, appeared distorted to my vision. These symptoms were more than I had expected, and occasioned me some alarm. At this juncture, very improdently, and without consideration, I throw out from the car three five-pound pieces of ballast. The accelerated rate of ascent thus obtained carried me too rapidly, and without sufficient gradation, into a highly rarefied stratum of the atmosphere, and the result had nearly proved fatal to my expedition and to myself. I was suddenly seized with a spasm which lasted for more than five minutes, and even when this, in a measure, coused, I could catch my breath only at long intervals, and in a gasping manner-bleeding all the while conjously at the nose and cars, and even slightly at the eyes. The pigeons, appearing distressed in the extreme, strucyled to escape, while the cat mewed nitsously, and, with her tourne hanging out of her mouth, stargered to and fru in the cur as if under the influence of poison. I now, too late, discovered the great rashness of which I had been guilty in discharging the ballast, and my agitation was excessive. I anticipated nothing less than death, and death in a few minutes. The physical suffering I underwent contributed also to render me nearly incapable of making any exertion for the preservation of my life. I had, indeed, little power of reflection left, and the violence of the pain in my head seemed to be greatly on the increase. Thus I found that my senses would shortly give way altogether, and I had already clutched one of the valve-ropes with the view of attempting a descent, when the recollection of the trick I had played the three creditors, and the possible consequences to myself should I return, operated to deter me for the moment. I lay down in the bottom of the car, and endeavoured to collect my faculties. In this I so far succeeded as to determine upon the experiment of losing blood. Having no lancet, however, I was constrained to perform the operation in the best manner I was able, and finally succeeded in opening a vein in my left arm, with the blade of my penknife. The blood had hardly commenced flowing when I experienced a sensible relief, and by the time I had last about half a moderate basinful, most of the worst symptours had abandoned me entirely. I nevertheless did not think it expedient to attempt getting on my feet immediately; but, having tied up my arm so well as I could, I lay still for about a quarter of an hour. At the end of this time I arose, and found myself freer from absolute pais of any kind than I had been during the last hour and a quarter of my ascension. The difficulty of breathing, however, was diminished in a vary slight degree, and I found that it would soon be positively necessary to make use of my condenser. In the mean time, looking towards the cat, who was again snugly stowed away upon my coat, I discovered, to my infinite surprise, that she had taken the opportunity of my indisposition to bring into light a litter of three little kittens. This was an addition to the number of passengers on my part altogether nuexpected; but I was pleased at the occurrence. It would afford me a chance of bringing to a kind of test the truth of a surmise which more than anything else had influenced me in attempting this ascension. I had imagined that the kabitasi endurance of the atmospheric pressure at the surface of the earth was the cause, or nearly so, of the pain attending animal existence at a distance above the surface. Should the kittens be found to suffer uneasiness in an east degree with their mother. I must consider my theory in fault, but a failure to do so I should look upon as a strong confirmation of my idea.

By sight wicked. I had settally attained as observation of seventeen niles above the surface of the certain. Thus, it researcd to me civilent that any nice of access was not only on the increase, but start being proposed most all bards being a surface of the increase of the nice of the proposed most all bards which I did. The points in up lood and can returned at interest with visibous, and I will confirmed the blooks orientized by the new low layers the which, I affered much less than night have been expected. I benefited, however, at every moment with move manneal the considerance perspective, and again of it ready for functions.

To view of the earth, at this period of my accession, was beautiful indeed. To the workward, the most read, and the solutional, and not a local flow law, by a boundless absect of appearable nurstified occas, which every measure gained a deeper and deeper this of blue. At a vast distance to the custword, although perfectly discratible, extended the instance of Grant Division. Because (Australia cause of Parison and Sprian, with a small portion of the northern part of the continect of Africa. Of individual colifices not a trace could be discovered, and the product exists of manifold had interly field early from the free of the cartil.

What mainly astonished me, in the appearance of things below, was the seeming concavity of the surface of

the gibts. I had, thoughtfoody comple expected to see its real occordy become evident as I normaled, but a very little reflecion safetion to explain the discrepancy. A line, dropped from up position perceptionality to the earth, would have formed the percentilents of a right-angled triangle, of which the base would have extracted from the right-angle to the restriction, and the hypotheneane from the berions to up position. But we highely are little or midning in comperious with my prospect. In other words, the hous and hypothenesse of the supposed triangle would, in up one, has been no long, when compared to the proposed collection, that the we former night have been expended as nordly practicle. In this measure the horizon of the surrount appears always to be spec not with the about a great statement below the horizon. Here the impossion of convoxity; and this improvision must fill the description of the horizon of the forestime shall have no great a proportion to the prospect that the appearst parallelism of the hos-suel hypotheness.

The pigoos about this time seeming to undergo made referring. I determined upon giving them their libery. I felt untiled see of them, a beautiful group and pilot bit upon the rise of the wickerwork. I be appointed extremely meany, beaking mationly around his, finitering his wings, and making a loud cooling noise, but could not be promosaled to trust thimself from the car. I took him up at the act there his to a both half-of the second of the seco

At a quarter past eight, being able no longer to draw breath without the most intolerable pain, I proceeded forthwith to adjust around the car the appearatus belonging to the condenser. This apparatus will require some little explanation, and your Excellencies will please to hear in mind that my object, in the first place, was to surround myself and car entirely with a barricade against the highly-rarefied atmosphere in which I was existing with the intention of introducing within this barriesde, by means of my condensor, a quantity of this same atmosphere sufficiently condensed for the purposes of respiration. With this object in view, I had prepared a very strong, perfectly air-tight, but flexible gum-elastic bug. In this bag, which was of sufficient dimensions, the entire car was in a manner placed. That is to say, it (the bag) was drawn over the whole bottom of the car, up its sides. and so on, along the outside of the ropes, to the upper rim, or how, where the network is attached. Having pulled the bag up in this way, and formed a complete enclosure on all sides, and at bottom, it was now necessary to fasten up its top, or mouth, by passing its material over the hoop of the network-in other words, between the network and the hoop. But if the network were separated from the hoop to admit this passage, what was to sustain the car in the mean time? Now, the network was not permanently fastened to the he-p, but attached by a series of running loops or necess. I therefore andid only a few of these loops at one time, leaving the cur suspended by the remainder. Having thus inserted a portion of the cloth forming the upper part of the bug. I refastened the loops—not to the hoop, for that would have been impossible, since the cloth now intervened—but to a series of large buttens, affixed to the cloth itself, about three feet below the mouth of the bag; the intervals between the huttens having been made to correspond to the intervals between the loops. This done, a few more of the loops were fastened from the rim, a further portion of the cloth introduced, and the disengaged loops then connected with their proper buttons. In this way it was possible to insert the whole upper part of the larg between the network and the hoop. It is evident that the hoop would new drop down within the car, while the whole weight of the car itself, with all its contents, would be held up merely by the strength of the buttons. This, at first sight, would seem an inadequate dependence; but it was by no means so, for the buttons were not only very strong in themselves, but so close together that a very slight portion of the whole weight was supported by any one of them. Indeed, had the car and contents been three times heavier than they were, I should not have been at all uneasy. I now raised up the hoop again within the covering of gum-clastic, and propped it at nearly its former height by means of three light peles proper for the occasion. This was done, of course, to keep the long distendal, the proper of the proper distribution of the proper distribution of the proper distribution. All that new remained was to fasten up the mouth of the endourne; and this was readily secondalished by gathering the folds of the material tox-cuter and twinting them to were the proper distribution.

In the side of the covering the adjusted road life our lad been inserted three circular passes of thick but clear glust, though which I could see widered inflictely accord not in every horizontal direction. In that protein of the cleds forming the botton was likewise a fourth window of the ame kind, and corresponding with a small aparture in the foot of the critical. This examble not love represellently down, but buting from it impossible to please any similar contrinsance everlood, an account of the preclifer manner of closing up the opening there, and the conceptual variables in the cledy. I condition expert now no sold report to see no slopels standard directly in any small. This, do comes, was a nature of little concepture; for, had I even been able to place a window at top, the hallon itself would have precreated up making any one of the preclifer.

About a foot below one of the side windows was a circular opening three inches in diameter, and fitted with a brass rim adapted in its inner edge to the windings of a screw. In this rim was screwed the large tube of the condenser, the body of the usechine being, of course, within the chamber of gum-elastic. Through this tube a quantity of the rare atmosphere circumjacent being drawn by means of a raceous created in the body of the machine, was thence discharged, in a state of condonation to mingle with the thin air already in the chamber, This operation, being repeated several times, at length filled the chamber with atmosphere proper for all the purposes of respiration. But, in so confined a space, it would in a short time necessarily become foul and unfit for use from frequent contact with the lungs. It was then ejected by a small valve at the bettem of the car, the dense air readily sinking into the thinner atmosphere below. To avoid the inconvenience of making a total easum at uny moment within the chamber this purification was never accomplished all at once, but in a gradual manner; the valve being opened only for a few seconds, then closed again, until one or two strokes from the pump of the condenser had supplied the place of the atmosphere ejected. For the sake of experiment I had put the cut and kittens in a small backet, and suspended it outside the car to a button at the bottom, close to the valve, through which I could feed them at any moment when necessary. I did this at some little risk, and before closing the mooth of the chamber, by reaching under the car with one of the poles before mentioned, to which a book had been attached. As soon as dense air was admitted in the chember, the boop and poles became unnecessary; the expansion of the enclosed atmosphere powerfully distending the gum-elastic.

By the time I had fully completed these arrangements, and filled the chamber as explained, it wanted only tue minutes of nine clocks. During the whole period of up king the multiparty, beadined the most turrible distress from difficulty of requiration; and bitterly did I report the negligence, or rather forbinations, of which I had been guilty, in parting off to the tax meant a matter of so much importance. But, having at height accomplished (i, I sow began to resp the benefit of any invention. Once again I bounded with profest freedom accomplished (i, I sow began to report the first of the agreet means; said, indeed, why should I not? I was also agreetly supprised to find upper it in a greet measure relieved from the visitest pains which had hitherts torresected me. A night breakeds, accompanied with a samation of Thus it research evident that a greet part of the musclimes attending the travened of strongeries reporting the strong of strongeries. The strength of the contraction of the pain codured for the last two hours should have been attributed allogether to the effects of a delicent replantation.

At twenty minutes before nine c'elect—that is to say, a short time prior to my cloning up the month of the calander—the newery statistical limiting, or and sown in the barmentey, which, as I mentioned before, was case of on a standed construction. It then indicated an altitude on my part of 132,000 feet, or flevand-twenty miles; and I consequently arroyed at that time an extent of the cartile as on amounting to no be than the three hundred-and-eventical part of the ordine superficies. At nine c'eleck I had again hat sight of land to the construction to the first before it because surroy that the ballow and affining mightly to the XxXv. The occus between the still retained its apparent convexity, although my view was often interrupted by the masses of cloud which finited to and fire.

At half-past size I tried the experiment of throwing out a handful of feathers through the valve. They did not float as I had expected; but dropped down perpendicularly, like a bulket, as many, and with the greatest velocity—being out of sight in a very few seconds. I did not at first know what to make of this extra-ordinary phenomenon; not being able to believe that my rate of ascent had, of a sublie, mot with so preligions an acceleration. But it some occurred to me that the atmosphere was now far to rare to sustain, even the feathers; that settingly a settingly fell, as they appeared to do, with great rapidity; and that I had been surprised by the united velocities of their descent and my own electrical.

By ten o'clock I found that I had very little to occupy my immediate attention. Affairs went on swimmingly, and I believed the balloon to be going newards with a speed increasing memently, although I had no longer any means of ascertaining the progression of the increase. I suffered no pain or uneasiness of any kind, and enjoyed better spirits than I had at any period since my departure from Botterdam; heaving myself now in examining the state of my various apparatus, and now in regenerating the atmosphere within the chamber. This latter point I determined to attend to at regular intervals of forty minutes, more on account of the preservation of my health than from so frequent a renovation being absolutely necessary. In the mean while I could not help making anticipations. Fancy revelled in the wild and dreamy regions of the moon. Imagination, feeling horself for once unshackled, roamed at will among the ever-changing wonders of a shadowy and unstable land. Now there were hoary and time-honoured forests, and eraggy precipiees, and waterfalls tumbling with a loud noise into abysees without a bottom. Then I came suddenly into still noonday solitudes, where no wind of heaven ever intruded, and where vast meadows of poppies, and slender, lily-looking flowers spread themselves out a weary distance, all silent and motionless for ever. Then again I journeyed far down away into another country where it was all one dim and vague lake, with a boundary-line of clouds. But fancies such as these were not the sole possessors of my brain. Horrors of a nature most stern and most appalling would too frequently obtrude themselves upon my mind, and shake the innermost depths of my soul with the bare supposition of their possibility. Yet I would not suffer my thoughts for any length of time to dwell upon these latter speculations, rightly judging the real and palpable dangers of the voyage sufficient for my undivided attention.

At five o'clock, r.m., being engaged in regenerating the atmosphere within the chamber, I took that opportunity of observing the cut and kittens through the valve. The cut herself appeared to suffer again very much, and I had no hesitation in attributing her uncasiness chiefly to a difficulty in breathing; but my experiment with the kittens had resulted very strangely. I had expected, of course, to see them betray a sense of pain, although in a less degree than their mother; and this would have been sufficient to confirm my opinion concerning the habitual endurance of atmospheric pressure. But I was not prevared to find them, upon close examination, evidently enjoying a high degree of health, breathing with the greatest case and perfect regularity, and evincing not the slightest sign of any uncasiness. I could only account for all this by extending my theory, and supposing that the highly rurefied atmosphere around might perhaps not be, as I had taken for granted, chemically insufficient for the purposes of life, and that a person born in such a median might possibly be unaware of any inconvenience attending its inhalation, while, upon removal to the denser strate near the earth, he might endure tortures of a similar nature to those I had so lately experienced. It has since been to me a matter of deep regret that an awkward accident at this time occasioned me tha loss of my little family of cats, and deprived me of the insight into this matter which a continued experiment might have afforded. In passing my hand through the valve, with a cup of water for the old puss, the sleeve of my shirt became entangled in the loop which sustained the baskot, and thus in a moment leasened it from the button. Had the whola actually vanished into air, it could not have shot from my sight in a more abrupt and instantaneous manner. Positively there could not have intervened the tenth part of a second between the disengagement of the basket and its absolute disappearance with all that it contained. My good wishes followed it to the earth, but of course I had no hope that either cat or kittens would live to tell the tale.

At six civiled I provinced a great portion of the earth's visible zero to the enternal involved in thick shadow, which continued to advance with gast resignity, until, at few mainter before zero, the whole surface is two search portions of night. It was not, however, and long after this item that the rays of the esting an enced in limitate that allows and this electromates, rathough of convent fully antisprod, that to fall to give me in infaints dead of plasmers. It was evident that, in the mensing, I should behold the rising luminory many lower at tame before the eliment of Koletenkan, in part of their instances are made infairtor the one-terminal, and have a present the contraction of the property contraction of the contraction of the contraction of the property contraction of the contraction of th

At ten o'clock, feeling alcepy, I determined to lie down for the rest of the night; but here a difficulty presented

itself, which, obvious as it may appear, had escaped my attention up to the very moment of which I am new speaking. If I went to sleep as I proposed, how could the atmosphere in the chamber be regenerated in the idenis? To breathe it for more than an hour at the furthest would be a matter of impossibility; or, even if this term could be extended to an hour and a quarter, the most ruiness consequences might ensue. The consideration of this dilemma gave me no little disquietude; and it will hardly be believed that, after the dangers I had undergoes, I should look upon this husiness in so serious a light as to give up all hope of accomplishing my ultimate design, and finally make up my mind to the necessity of a descent; but this hesitation was only momentary. I reflected that man is the veriest slave of custom, and that many points in the routine of his existence are deemed corntially innorman which are only so at all by his having rendered them habitual. It was very certain that I could not do without sleep; but I might easily bring myself to feel no inconvenience from being awakened at intervals of an hour during the whole period of my review. It would require but five minutes at most to recenerate the atmosphere in the fullest manner; and the only real difficulty was to contrivo a method of arousing myself at the proper moment for so doing. But this was a question which, I am willing to confess, occasioned me no little trouble in its solotion. To be sure, I had heard of the student who, to prevent his falling asleep over his books, held in one hand a ball of copper, the din of whose descent into a basin of the same metal on the floor beside his chair served effectually to startle him up, if at any moment he should be overcome with drowniness. My own case, however, was very different indeed, and left me no room for any similar idea; for I did not wish to keep awake, but to be aroused from slumber at regular intervals of time. I at length hit upon the following expedient, which, simple as it may seem, was hailed by me, at the moment of discovery, as an invention fully equal to that of the telescope, the steam-engine, or the art of printing itself.

It is necessary to premise that the balloon, at the elevation now attained, continued its course upwards with no even and undeviating ascent, and the car consequently followed with a steadiness so perfect that it would have been impossible to detect in it the slightest vacillation. This circumstance favoored me greatly in the project I now determined to adopt. My supply of water had been put on board in kegs containing five gallons each, and ranged very securely around the interior of the car. I unfastened one of these, and taking two ropes, tied them tightly across the rim of the wickerwork from one side to the other, placing them about a foot spart and parallel, so as to form a kind of shelf, upon which I placed the keg, and steaded it in a horizontal position. About eight inches immediately below these rupes, and four feet from the bottom of the car, I fastened another shelf, but made of thin plank, being the only similar piece of wood 1 had. Upon this latter shelf, and exactly beneath one of the rims of the keg, a small earthen pitcher was deposited. I now bored a hole in the end of the keg over the pitcher, and fitted in a plug of soft wood, cut in a tapering or conical shaps. This plog I pushed in or pulled out, as might happen, nntil, after a few experiments, it arrived at that exact degree of tightness at which the water, coming from the hole, and falling into the pitcher below, would fill the latter to the brim in the period of sixty minutes. This, of course, was a matter briefly and easily ascertained, by noticing the proportion of the pitcher filled in any given time. Ilaving arranged all this, the rest of the plan is obvious. My bed was so contrived upon the floor of the car as to bring my head, in lying down, immediately below the mouth of the pitcher. It was evident that, at the expiration of an hour, the pitcher, getting full, would be forced to run over, and to run over at the mouth, which was somewhat lower than the rim. It was also evident that the water, thus falling from a height of more than four feet, could not do otherwise than fall upon my face, and that the sure consequence would be to waken me up instantaneously, even from the soundest slumber in the world.

It was fully eleven by the time I had completed these arrangements and I immediately better knyeff to be, with full confidence in the efficiency of my invariation. Nor in this nature was I dispeptated. Purnetually every sixty minutes was I accessed by my trusty chrosometre, when, having compiled the pitcher into the bumgshole of the good perfected the datas of the conductor, I rettive again to be 10c. If These regards interruptions to may damabe coursed mo even low-discontine than I had anticipately; and when I finally arose for the sky it was seven o'clock, and the sum had dravely stathen known perform above that the many darkey stathen known perform above the full returns the sum and around the sum had dravely stathen known perform above the full returns the sum of around the sum had dravely stathen known perform above the full returns the sum of around the sum had dravely stathen known perform above the full returns the sum of around the sum had dravely stathen known perform above the full returns the sum of around the sum had dravely stathen known performs above the sum of a return the sum of the sum of around the sum had dravely stathen known performs a return the sum of the sum of around the sum had dravely stathen known performs and the sum had dravely stathen known

April 2nd—I found the billow at an insures height indeed, and the earth's convexity had now become rithingly manifest. Below me in the coan lay a cluster of lakel specks, which undoubtedly were islands. Over how, the sky was of a jetty lakel, and the stars were brilliantly viable; leaded they had been so constantly since the first day of secent. For away to the northward I perceived a thin, white, and exceedingly brilliant line, or starks, on the edge of the berince, and I I had no belattate in supposing it to be the southeren disc of the ion of the Polar Sos. My curiosity was greatly excited, for 1 had hopes of passing on much farther to the north, and might possibly, at some privale, find anyelf placed directly above the Pole itself. I now learnested any great elevation weakly, in this case, prevent my taking as accurate a survey as 1 could wish. Much, however, might be ascertained.

Nothing else of an extraorlinary nature occurred during the sky. My apparatus all ownitined in good order, and the halloon still necorded without any perceptible variilation. The cold was intense, and ebliged use to wrap up chosely in an overcost. When darkness came over the earth, betook myoulf to bed, although it was fee many hours afterwards freed darplight all around my inmediate situation. The water-clock was punctual in its duty, and Leipt until next horoning security, with the exception of the periodical interrupts.

April 4b—Arose in goal boths and spirits, and was notabled at the singular change which had taken place in the appearance of the sor. It had bet an in great menore the deep int of their thick hillers were, being most of a greyide-beltic and of a latter dustling to the eye. The convexity of the cosm had become so critical, that the curvier mass of the inflant water reserved to be mainling looking curve the slope of the brincing, and I formit approximate the strength of th

April 26th.—Behold the singular phenomenon of the sun rising while nearly the whole visible sortice of the arth continued to is involved in durinous. In time, however, the light spread infer over all, and I agoids saw the time of ince to the northword. It was now very distinct, and appeared of a much durber law than the waters of the cone. I was collectly approaching it, and suffice gardening. Fascied it could guide indistinguish a strip of the act to the northward, and one also to the workward, but could not be certain. Weather moderate. Nothing of any consequence happened during the day. West early to led.

April 64.—Was surprised at failing the rim of it so at a very underste dishance, and an immone field of the summe material strateling away off to the borden in the north. It was reliested that first highloo held it present course it would soon earlies above the France (toon, and I had now little doubt of uffinished yearing the Fok-During the whole of the day I contained to seer the ic. Twent-ship that finish of updates and superioristic processes, origing undeskedly to the certific form being that of an oblate spheroid, and my and materially increased, origing undeskedly to the certific form being that of an oblate spheroid, and my arriving above the factored regions in the visiting of the Arrice forces. Whose advances a larged overtext my waste to be in great anxiety, fearing to puse over the object of so much curiosity when I should have no opportunity of observine it.

April 7th. - Arose early, and, to my great joy, at length beheld what there could be no hesitation in supposing the northern Pole itself. It was there, beyond a doubt, and immediately beneath my feet; but, alas! I had now ascended to so wast a distance that nothing could with accuracy be discorned. Indeed, to judge from the progression of the numbers indicating my various altitudes, respectively, at different periods, between six a.m. on the 2nd of April, and twenty minutes before nine a.x. of the same day (at which time the barometer ran down), it might be fairly inferred that the balloon had now, at four o'clock in the morning of April the 7th, reached a height of sof loss certainly than 7254 miles above the surface of the sea. This elevation may appear immense; but the estimate upon which it is calculated gave a result in all probability far inferior to the truth. At all events, I undoubtedly beheld the whole of the earth's major diameter; the entire northern hemisphere lay beneath me like a chart orthographically projected; and the great circle of the equator itself formed the boundary-line of my horizon. Your Excellencies may, however, readily imagine that the confined regions hitherto unexplored within the limits of the Arctic circle, although situated directly beneath me, and therefore seen without any appearance of being foreshortened, were still in themselves comparatively too diminutive, and at too great a distance from the point of sight, to admit of any very accurate examination. Nevertheless, what could be seen was of a nature singular and exciting. Northwardly from that hage rim before mentioned, and which, with slight qualification, may be called the limit of human discovery in these regions, one unbreken, or nearly unbroken, sheet of ice continues to extend. In the first few degrees of this its progress, its surface is very sensibly flattened, farther on depressed into a plane, and finally, becoming not a little concare, it terminates, at the Pole itself, in a circular centre, sharply defined, whose apparent diameter subtended at the balloon an angle of about sixty-five seconds, and whose dusky line, varying in

intensity, was at all times darker than any other spot upon the visible hemisphore, and constantly deepened into the most absolub halarness. Farther than this little could be assertiated. By twelve velocit the circular networks and the same properties of the strictly decreased in circumference, and by seven n.x. I tost sight of it entirely; the balloon passing over the western limb of the loss, and floating wave ynaphly in the direction of the optator.

April 84.—Found, a sensible deminstra in the earth apparent dissource, bouldes a material clumsten in its general color and apparaness. The whole wills are aparticle in different degrees of its rid poly roller, and in some perties had acquired, a brillinger even point in the eye. My vine deservated was also considerably some of the sensitive was also considerably could only serve and the notion again good of the sensitive of the sensitive of the view to had translated as more or loss for the hast forty-eight hours; but my greeset are sensions devotion brought closer tagother, as it were, the finding bolies of reporter, and the intervalence because, of convex, more and many polyboids in properties to my second. Nevertheless, I could easily review that the lation now bound of however the region of green that is in the circumstance of loss of this price was the man benefit suitedness, and I habilit it as a bugge more of distincts success. Indeed, the direction I had hildren to then benefit and the sensitive of the sensitive in the attack and in the finished to the original and polyborate from the sensitive in the attack of the sensitive in the attack and properties of the sensitive in the attack of the sensitive in the attack and properties of the sensitive in the attack and the sensitive in the stage of the sen

April 20th—To-day the earth's diameter was greatly diminished, and the colour of the surface assumed hourly a deeper tint of yellow. The balloon kept stodilly on her course to the southward, and arrived at nine r.m. ever the northern edge of the Mexican Gulf.

April 100.—I was sublesly amount from shunker, short five clock this meeting, by a loof, credding and terrifo count, for which I could in an ansacrescent. It was of very left direction, but which it instefs, remaind nothing in the world of which I had any previous represence. It is needless to say that I became conscrively showned, being in the first instance, statistical to some in the largering of the labout. I manufale all my appear abstraction of the contraction of the contractio

April 10A.—Found a starting disination in the apparent diameter of the certh, and a considerable increase, now observable for the first time, in that of the mon itself, which vanted only a five days of being fill. It now required long and excessive labour to condense within the chamber sufficient atmospheric air for the sustemance of file.

April 126—A singular alteration took place is regard to the direction of the ladious, and although fully admittable affective colors, and although fully admittable proceeding in Sensor comes, about the twenticth parallel of worthern latitisel, it turned out addically, at an acute angle, to the neutrand, and thus proceeded throughout the day, Keeping marky! if not altogether, is the exact place of the outer figure. What we would yet framach, but we preceded the colors of the colors of the colors of the color of figure. What we would yet framach is a preceded to the colors of the colors of the colors of the colors of figure. What we exceed the preceded, in a norse or two solvers, for a needed of many bears.

April 13th—Was again very mech alarmed by a repetition of the load exactling noise which terrified neces the tenth. Themph long mpon the milject, but was mable to form any antifactory conclusion. Great decrease in the carth's apparent diameter, which now subscaded from the balloon an anglo of very little more than twesty-five degrees. The moon could not be seen at all, being nearly in my senith. I still continued in the phase of the ellipse, but made little prepare to the castarrance.

April 14th.—Extremely rapid decrease in the diameter of the earth. To day! I because strongly impressed with the flow that the ballicar was now entailly running up the line of apidies to the paint of perigres—in other words, holding the direct course which would bring it immediately to the moon in that part of its orbit the neutrat to the oards. The moon itself was directly overhead, and consequently hidden from my view. Great and long-constituted labour necessary feth the condensation of the stamosphere.

April 15th.—Not even the outlines of continents and seas could now be traced upon the earth with distingness. About twelve o'clock I became aware, for the third time, of that appalling sound which had astonished uso before. It now, kowever, confirmed for some moments and guthernd intensity as it continued. All length, while strapping and transition, it must be a registration of I knew us that histoors destruction, the car vibrated with consister violence, and a giguetia and finning mass of some material which I could not distinguish mass with a view of a fluorant blumber, varing and to coming type the ballow. When my farm and antianheast that in most green abusiness. I had table difficulty in supposing it to be some nighty velocine frequent criced from that world placed upon the owner. The contract of the contr

Age 104.—To day, kaking upwards as well as I could, through each of the side-indows alternately, It should, to any great oldight, very small perion of the mooti disk protenting, as it were, and it she beyond the hope derendences of the hallow. My agitatics was extreme, for I had now little doubt of soon reaching the end on py prilaxe super, lined, the haltow recy required by the condears had increased on a nost opposition depress, and allowed no accuracy any neptic from centrics. Sleep was a matter nearly out of the question. It becomes quite ill, under hydracter classification of the proposition of the propositio

April 17th .- This morning proved an epoch in my voyage. It will be remembered that on the thirteenth the earth subtended an angular breadth of twenty-five degrees. On the fourteenth this had greatly diminished; on the fifteenth a still more rapid decrease was observable; and on retiring for the night of the sixteenth, I had noticed an angle of no more than about seven degrees and fifteen minutes. What therefore must have been my amazement, on awakening from a brief and disturbed slumber, on the morning of this day, the seventeenth, at finding the surface beneath me so studienly and wonderfully augmented in volume, as to subtend no less than thirty-nine degrees in apparent angular diameter! I was thunderstruck! No words can give any adequate idea of the extreme, the absolute horror and astonishment with which I was seized, possessed, and altogether overwhelmed. My kness tottered beneath me-my teeth chattered-my hair started up on end. "The balloon, then, had actually burst!" These were the first tumultuous ideas which hurried through my mind: "The balloon had positively burst!--! was falling-falling with the most impetuous, the most unparalleled velocity! To judge from the immense distance already so quickly passed over, it could not be more than ten minutes at furthest before I should meet the surface of the earth, and be hurled into annihilation?" But at length reflection came to my relief. I paused-I considered -and I began to doubt. The matter was impossible. I could not in any reason have so rapidly come down. Besides, although I was evidently approaching the surface below me, it was with a speed by no means commensurate with the velocity I had at first conceived. This consideration served to calm the perturbation of my mind, and I finally succeeded in regarding the phenomenon in its proper point of view. In fact, amazement must have fairly deprived me of my senses, when I could not see the vast difference in appearance between the surface below me and the surface of my mother earth. The latter was indeed over my head, and completely hidden by the balloon, while the moon-the moon itself in all its glory-lay beneath me, and at my feet.

The stepor and surprise profused in age into by this extraordinary change in the porture of skiles, was perhaps, after all, that part of the adversaries that succeptible of explanation. For the devolvements in itself was not only natural and inevitable, but had been long settably satisfactor, as a circumstance to be expected wherever I hould arrive at the case print of any regards where the attention of the hands indice by represed by the attention of the hands indice by represed by the attention of the satisfactor of th

It is almost needless to any that, upon coming to a due seess of my situation, and emorging from the terrewhich had absorbed every faculty of my soul, my attention was in the first place wholly directed to the contemplation of the genural physical appearance of the moon. It hay beneath me like a chart—and although I judged it to be still at no incomolerable distance, the indectures of its surface were defined to my vision with a most striking and adaptagher unaccombable distinctions. The entire scheme of covers or one, and indeed d any lake or vive, or body of water whatevers, streek in, or, it the first glasse, as the not extraordinary feature is its prological condition. Ver, strange to say, it beloked water best profession of a character devided, arbitral, delongly for the greater periods of the hemisphere is right was covered with innormable velonize meantable, coincid in shape, and having more the appearance of utilities that of natural productors. The highest same glass made articles to the condition of the

April 18th,-To-day I found an enormous increase in the moon's apparent bulk, and the evidently accelerated velocity of my descent legan to fill me with alarm. It will be remembered that, in the earliest stage of my speculations upon the possibility of a possage to the moon, the existence in its vicinity of an atmosphere dense in proportion to the bulk of the planet had entered largely into my calculations; this, too, in spite of many theories to the contrary, and, it may be added, in spite of a general disbelief in the existence of any lunar atmosphere at all. But in addition to what I have already urged in regard to Encke's counct, and the reduced light, I have been strengthened in my opinion by certain observations of M. Schructer, of Lilienthal. He observed the moon, when two days and a half old, in the evening soon after sunset, before the dark part was visible, and continued to watch it until it became visible. The two cusps appeared tapering in a very sharp faint prolongation, each exhibiting its farthest extremity faintly illuminated by the solar rays, before any part of the dark hemisphere was visible. Son afterwards, the whole dark limb became illuminated. This prolongation of the cusps beyond the semicircle I thought must have arisen from the refraction of the sun's rays by the moon's atmosphere. I computed also the height of the atmosphere (which could refract light enough in its dark hemisphere to produce a twilight more luminous than the light reflected from the earth when the moon is about 32' from the new) to be 1356 Paris feet; in this view, I supposed the greatest height capable of refracting the solar ray to be 5376 feet. My ideas upon this topic had also received confirmation by a passage in the eighty-second volume of the Philosophical Transactions, in which it is stated that, at an occultation of Jupiter's satellites, the third disappeared after having been about one or two seconds of time indistinct, and the fourth became indiscernible near the limb.

Upon the resistance, or more properly upon the support, of an atmosphere, existing in the state of density imaginal, I but of corne enturily depended for the select of any ultimate slewers. I Small it then, after the Pare II prove to have been mistaken, I had in conceptence surding letter to orspect, so a joint to my substrate, rath a being dashed into storces against the ragged serious of the satellite. And sinked I had now every reason to be traffied. My distance from the more was compartitely triffing, while the labour regimed by the combener was diminished not at all, and I could shower so inflativities of whether our given jurity in the six.

April 104.—This mering, to say great jeg, about nine olock—the surface of the mose being frightfully more, and any apprehensic excited to the state—the paper of any continear gave evidents these of an alternation in the stroughers. By ten I had mean to believe its deorly considerably increased. By device very little labour was measured at the appearance; and at wheele who clock will saw measured the measured to increase the recognition, where, families no inconvenience from having show on, I family threw upon the game-desic chamber, and margined it from remorable one. A might have been expected, appeared without backelse were the inmadrate conceptuates of an experiment as precipitors and full of dauger. But there and other difficulties attending requireds, as they may lowing them both an an assumpt in any appeared a to the atmer rots as such the contraction of a two-spectra down in proportion to the same of the antition, and II had preclaimly and the contraction of an extraction of an extraction of the proportion of the same of the satisfies, and it is a small of the contraction of a strougher down in proportion to the same of the satisfies, and II had preclaimly an accordance of the contraction of a strougher down in proportion to the same of the satisfies, and it is a sufficient of a strougher down in proportion to the same of the satisfies, and it is a sufficient of an accompact of the same of the satisfies of the same of the satisfies of the same of the satisfies of the same of the satisfies.

<sup>•</sup> Heredina writes that he has several times found in alice perfectly clear, when even stars of the sixth, and severals magnitude even completum, that it the same allows of the same, in the same stars of the same and the sam

looked for in seasthing (an atmosphere?) existing about the

Casain frequently observed Seators, Anglier, and the fixed stary, when approaching the mean to overhalants, to have their circular figure changed iron no well stars; and, in other occultations, be found to allevation of figures at all. Heree it might be supposed that at some times, and not at others, there is a derive matter scompassing the moon, wherein the mys of the stars are principle.

in supposing this density, even at the surface, at all adequate to the support of the great weight contained in the our of my balloon. Yet this abould have been the case, and in an equal degree as at the surface of the curth, the actual gravity of bodies at either planet supposed in the ratio of the atmospheric condensation. That it was not the case, however, my precipitous downfall gave testimony enough; mly it was not so can only be explained by a reference to those possible geological disturbances to which I have formerly alinded. At all events, I was now close upon the planet, and coming down with the most terrible impetuesity. I lost not a moment, accordingly, in throwing overboard first my ballast, then my water-kegs, then my condensing apparatus and gum-clastic chamber, and finally overy article within the car. But it was all to no purpose. I still fell with horrible rapidity, and was now not more than half a mile from the surface. As a last resource, therefore, having got rid of my coat, hat, and boots, I cut loose from the balloon the car itself, which was of no inconsiderable weight, and thus, clinging with both hands to the uctwork, I had barely time to observe that the whole country, as far as the eye could reach, was thickly interspersed with diminutive habitations, ere I tumbled headlong into the very heart of a fantasticallooking city, and into the middle of a vast crowd of ugly little people, who none of them uttered a single syllable, or gave themselves the least trouble to render me assistance, but stood, like a parcel of idiots, crimning in a believous manner, and eyeing me and my balloon askant, with their arms set a kimbe. I turned from them in contempt, and, gazing upwards at the earth so lately left, and left perhaps for ever, beheld it like a large, dull, copper shield, about two degrees in diameter, fixed immovably in the heavens overhead, and tipped on one of its edges with a crescent border of the most brilliant gold. No traces of land or water could be discovered, and the whole was clouded with variable spots, and belted with tropical and equatorial zones,

Thus, may it please your Excollection, after a series of great anxieties, unbounded dangers, and anapurallade owners. I had a length, on the inductional Age of my departure flow filter-bana, arrived in a neight at the conclusion of a veryage unboultedly the most extraordinary, and the most monostons over accomplished, materiakes or conceived by my demines of earth. Het my devolutere by retreasin be be related. And, indiced, your Excellences may well imagine that, other a residence of few years apon a phase tast only deeply increasing in its corn peculiar character, but reduced doubly no by its infinizate connection, a conject of sacilities, with the world included by man. I may have instelligence for the private car of the State's Colleges of Austronous red far more importance than the details, however worlderful, of the corn expression of the contraction of the contraction

I have much, very much, which it would give me the greatest pleasure to communicate. I have much to say of the climate of the planet; of its wonderful alternations of heat and cold; of unmitigated and burning sampline for one fortnight, and more than polar frigidity for the next; of a constant transfer of moisture, by distillation like that is races. from the point beneath the sun to the point the farthest from it; of a variable zone of running water; of the people themselves; of their manners, customs, and political institutions; of their popular physical constructions; of their ugliness; of their want of ears, those useless appendages in an atmosphere so peculiarly medified; of their consequent ignerance of the use and properties of speech; of their substitute for speech in a singular method of intercommunication; of the incomprehensible connexion between each particular individual in the moon with some particular individual on the earth--a connexion analogous with, and depending upon, that of the orbs of the planet and the satellite, and by means of which the lives and destinies of the inhabitants of the one are interwoven with the lives and destinies of the inhabitants of the other; and, above all, if it so please your Excellencies, above all, of these dark and hideous mysteries which lie in the outer regions of the moon-regions which, owing to the almost miraculous accordance of the satellite's rotation on its own axis with its sidereal revolution about the earth, have never yet been turned, and, by God's mercy, never shall be turned, to the scrutiny of the telescopes of man. All this, and more-much more-would I most willingly detail. But, to be brief, I must have my reward. I am pining for a return to my family and to my home; and as the price of any further communications on my part, in consideration of the light which I have it in my power to throw upon many very important branches of physical and metaphysical science, I must solicit, through the infinence of your honourable body, a pardon for the crime of which I have been guilty in the death of the creditors upon my departure from Rotterdam. This, then, is the object of the present paper. Its bearer, an inhabitant of the meon, whom I have prevailed upon and properly instructed, to be my messenger to the earth, will await your Excellencies' pleasure, and return to me with the pardon in question, if it can in any manner be obtained,

I have the honour to be, &c., your Excellencies' very humble servant,

HASS PEABLE.

Upon finishing the perusal of this very extraordinary document, Professor Rubadub, it is said, dropped his pipe upon the ground in the extremity of his surprise, and Mynheer Superbus Von Underduk, having taken off his spectacles, wiped them, and deposited them in his pocket, so far forgot both himself and his dignity as to turn round three times upon his heel in the quintoscence of astonishment and admiration. There was no doubt about the matter-the pardon should be obtained. So at least swore, with a round oath, Professor Ruhadub, and so finally thought the illustrious Von Underduk, as he took the arm of his brother in science, and, without saving a word began to make the best of his way house to deliberate upon the measures to be adopted. Having reached the door, however, of the bargomaster's dwelling, the professor ventured to suggest that, as the messenger had thought proper to disappear (no doubt frightened to death by the savage appearance of the burghers of Rotterdam), the parket would be of little use, as ne one but a man of the moon would undertake a voyage to so vast a distance. Te the truth of this abservation the burgemaster assented, and the matter was therefore at an end. Not so, however, rumours and speculations. The letter, having been published, gave rise to a variety of gossip and opinion. Some of the over-wise even made themselves ridiculous by decrying the whole business as nothing better than a hoax. But hoax, with these sort of people, is, I believe, a general term for all matters above their comprehension. For my part, I cannot conceive upon what data they have founded such an accusation. Let us see what they say:-

Imprimis. That certain wags in Ratterdam have certain especial antipathies to certain burgomasters and attronomers.

Secondly. That an odd little dwarf and bottle-conjurer, both of whose ears, for some misdemeanor, have been cut eff close to his head, has been missing for several days from the neighbouring city of Bruges.

Thirdly. That the newspapers which were stack all over the little balloon were newspapers of Holland, and therefore could not have been made in the moon. They were dirty papers—very dirty; and Glock, the printer, would take his Bible oath to their having been printed in Rotterdam.

Fourthly. That Hass Pfault hinself, the drustees villain, and the three very idle gentlemen styled his creditors, were all secon no longer than two or three days ago, in a tippling-hoose in the suburbs, having just returned, with money in their pockets, from a trip beyond the sea.

Lasty. That it is an opinion very generally received, or which ought to be generally received, that the Golges of Astronomers in the city of Reterdans, are well as all atter-colleges in all other parts of the world—not to mention colleges and autrenomers in general—are, to say the least of the matter, not a whit better, nor greater, nor wiser than they could to be.

Cornelius O'Dowd expressed the following opinion as late as October, 1864:-

. . . Next to those [members of the Alpine Chib] in order of niter uncleamons are the people wha go up in lalloca a, and who come down to tell us of the temperature, the air-currents, the shapes of the clouds, and amount of atmospheric presents in a region where nobody wants to go, nor has the slightest interest to hear about— Biochemos's Magerius.

By the kind permission of Messra. Routledge I am able to add a chapter from the 'Younger Mnuchausen,' a new work, which is not one of the least amusing of Mr. Charles Bennett's writings.

When Mr. Coxwell told M. Godard that Munchansen knew less about halloons than Nadar, I felt at once that he was either blinded by jealousy or shrouded in ignorance. Ballooning, I own, has presented to me many difficulties, but I have conquered most of them; and although

Associated, I seem, has presented to me many difficulties, but I have conquered most if them; and although Curvell has then away Mr. Glaisher's breath at a height of four miles from the earth.—Has he never been to the Moon?

I have.

He has built a gas belloon. Has he over tried fire, water, Colza eil, petrolnum, or chloroform?

He is contented with eiled silk. I should advise him to "go in," as I did, for cork, paper, indis-rubber, short-lead, tin plates, cast-iron, or Scotch granite.



The CHAMBER of GENIUS.

(Pray excuse my feelings, but I cannut afford to be misrepresented, even by so great a man as my friend

Coxwell.)

I always look upon myself as a born acronant; for when an infant, six weeks old, my nurse took me for an airing an Shakassare's Cliff (wa lived at Dover then), a strong wind carried me out of her arms, and I was borne

safely across the British Channel to Calais, my ample petticost forming a very excellent parachuse. I do not mean to say that I had anneh to do with the success of this feat myself, but I am led to believe that it gave a hist on my ballooner.

Will on I rescriber posing doug the streets of London in a shower of min, holding over my book a large gighten gingmarked. I we take only a very little by brilend, and the lang strictle are arriver more time to could learn. I was on the point of selecting a convenient area, down which to deep it, when an explosion of gas at a harder shape filling a quantum suntherly with hydrogan, and immediately converted it into a positive at the selection of the selection of

Still those were, as one may say, but the accidents of youth; it was at a somewhat later period that I gave myself up thoroughly to the study of aeronautics.

And in this way it happened >-Fond of speculating about the mystery of gravitation, the question, "What is it that sticks us so tightly on
to the earth?" was to me most interesting. Almost the first book that I and was me in which I found an authentic
narrative of the adventures of a German student, who denented two nances of gravitation into a stoppered bottle,
but inadvertnet! Not his bettle and has like by pulling out the stopper to do in.

It occurred to me, on perusal of these facts, that if I had two ounces of the essence of gravitation, I could travel anywhere that I pleased, not fearing for one moment that Manchausen would come to grief over the stopper.

In personnee of this device, I sent down to Stelfedd for five tons (100 eets) of susquestic own, and precording the same week from Himmingham to prompt (16 on, voiringhold) of fluoritie of clashine, I ermshed these two diverse materials in a steam-stall of my own invertains, and when by super-steam best and plytude latteries. I shall developed the activative, segregation in practicles, a long us formed, which some closed discussion. Of Courses then it was but easy went to collect the extract of gravitation in two-onner viale, and to recurs it therein by means of glass attemptors.

So far everything was simple; but, also! now I found myself in possession of an atterty impracticable power.

It was too good to be useful,

No wonder the Gorman student lost his life.

Even I could not control it. The moment the stopper was in the slightest degree released, off I flew from the earth with the rapidity of a discharged bombshell, stopping for nothing less than a planet or a fixed star.

The first experiment I tried shot me into the sun; the second, I shot myself back again, with a great burn on the bridge of my nose.

When I sgain released the stopper, it is true that I only reached the moon, but I so scratched myself against

the man's faggots, that I wender how I ever found sticking plaster enough to heal my wounds.

Once I reached the Dog star, which, by the by, is not a dog at all, nor nucle of a star cither.
Finally, I got my sufficen in such a frightful most by tunabiling into the Milty Way about skinning-time,
that I put all my dangerous two-ounce vials on the top-shelf of my little corner capboard, determined to give this

daring scheme up for a had job.

Nothing can ever induce me to use one of these bottles again-

But if I had so fruitlensly risked my lifts over essence of gravitation, it had hat had the affect of settling say mind more firmly in the direction of balloons. It is true I had broken my arm, dirlocated my thigh, fractured my skull, and broken my neck; in this series of experiments, which had proved too successful to be safe; but as balleons, instead of making too quickly for the place of destination, ordinarily make for nothing et all in particular, I naturally felt that here, if anywhere, must be safety.

Armod with this idea, I at one purchased rescript thousand yards of side sill, ont the "gorn" from any own pattern, at one handred and review seeing-machines a wave types the seam, so that by the time last completed my painet grayers, and treble-action antisy-wine. I had ready for ascent just simply the solutes and host-propertional gas a billion of that he every twice near said. It was excluded to that the burndered people except of account, oney of devent, has—out this is the cut of a collary bullooming—entirely at the energy of the wines. At first I trials on exclude the wines. At first I trials on each forwards for this law, that any case of the lowers of the lo

I invented my
Patent Five-soap-Received-Negral-Ballock-Bellows.

which blow up on opposition breeze, and carried me along even in spite of "rade Boross."

When I tell you that to this hour I keep a small visiting balloon, with the "recurved attachment," in my back gurdon always inflated, you will at ence understand that it must have been a tolerable success.

Indeed it was bet a development of this plan that led to the exhibitancest of my "welf-coding messeager lattices," wave rapidly thating the place of the electric thingpash, which indeed it is highly to entirely approach. By means of this work-field little machine you may send messages to all parts of the world, without any previous hother about administrate colds or of horseling with, and always hold for a meaner, and it is messages. The messages "risks me measures are in-messages" relates to the fine that the mersearch are as register as to give rise to a set of arithmetical quality, which enables it to communic the little fines in the raper in coasting a precords at the letters.

Babbage had no hand in it I assure you.

But talking of Babbago reminds me that there is a phrase in common use,-

"Castle in the Air."

Some greatheness plead grally to building them, but I must say that I am the inventor. Munchannes build as letter "Cuchin the thir" data are see seed I lawer. I have drawn a reak shatch of one; and you will see on locking at it that us get one gos from the superincumbent ballons: water we have gover the side of the same one of the same of the s

I might about say that balloons are the rage; if was only last most that I was called upon by the evel-hard Taylor, the furriers mever, to construct a balloon supols) of naving house, functions, functions and back garden, all at one go. The effort is simple comedy to the electric mixed to become are now-edvey built writtend foundation, it is nowly a quotion of adals and halloon power, and there you are red-house rise seasily except, which we have the construction of the contract of the production of the production of the contract of the production of the contract of t

For it is all important to save treable. I saved the treable of stepping, by making a balloon with motive power so vigorous, that once started it could never be stopped; and indeed it would give not an opportunity of claiming the naminy of ten thousand pounds, wairing so patiently for the investor of proprietud motion, ald it not n course of time wear itself out, when I am every to say It falls to pieces. Still, it is better than my "resourceasts"



Plate airrographed at the Ordinance Survey Of Sec Similarityton under the superintendence of Cupt\*H.Belahan Surve R.L. Col. Set H. Sauce R.E. F.R.S. Sec. Director.

balloon," which turns over and over like an aerial harlegoin, giving itself a fresh impetus every turn. It is true that this machine was never known to wear out, and can hardly fall to pieces, but as it has such a tendency to produce a vicion: "a ris-ckwes," I have thought it advisable to withdraw the patent,

One use, however, to which I have put this invention is worthy of further note. You can quite understand what a vicient pull would be given by the sudden turning over of this machine; perhaps also you are aware that we have had this years a vory bet summer.

Well, you wish to know what connexion the acrobat balloon has with the undue boat of the weather. I will

One million of these tumbling balloons barnessed in the foggy winter weather to this earth, sufficed to pull

it a little nearer to the sun; bence the hot sammer.

So you see balloons have been of some use one way and the other, if it be only to make grapes grow

in England; although I would not for a moment suppose that all balloons are as useful; some are merely scientific toys.

Such as my kito ballow, which could not be guided by saything but the wind, it being composed of seven bandred kites, all sailing at one and the same time, dangeing after them the car and its immates. As for my bird ballow, that never cause down again after it went up, for the first time it was borne in the air by a variety of strong-winged hirds, but as the birds were not all of a feather they refused to flock, as the proverb says they should, and where they all west to boldy known.

The butterfly balloon took too long to start, and when it was fairly eff, only made about ten miles an hour, so it was not of much use.

The wate-beying ballow was also of little vail, because of the freesant trouble of winding up fifty thousand waters, become threadle of any six people, and thus wall it could every still be such as a, that I look up not be balloon as aquable of supernelling steam; indeed, I take it, that serial machines may at some future too make the world liked quite undeed, or any but reconstay proposes, set that of govering eitherens for balloon construction, and onlive wherewith to were the carry—perhaps a little coul to distill gas may be required, and always the earth must be preserved as a place to full upon.

But be that as it may, one thing at least is certain, that the purposes to which balloons may be applied are almost innumerable.

I once went "drag netting" for Federals in America. We "rose" a balloon with double grayands and widemonded net attached; lovering over the enemy, we watched our opportunity, and there out our not on to the 97th Manachunet Tigger Case, optiming the whole regiment. My recurred bellow blew us back to the Confederate camp, and we dragged in, triumplantly, the whole of our prisoners.

People talk about disabling iron-clud abjus with Sir William Armstrong's 900-pounder; but what necessity can thore be for cannon, when by plumbing your balloon ten miles above saything, fort, ship, bowes, or palace, you may just quietly drop over the edge of the car a missile—an explosive abell—that will put an end to it at once?

But among the purpose to which balloons may be turned, there is none more useful than that of ringuine. You see, in consequence of my having pulled the centre for a cet of its bester trace, by shee had not only a but but a day summer; the earth has been parelled, eather daying, compa perioding, while a few bondered on Pay Payer. Amazat Warra Case would have aincred all the. Billion good soy which a condensing operators, by which notice true is gathered as a high elevative; and it is then and there div-dauged spon the nurface of the lated in a series of greater downers. By the measure that of a payle date of sinks, the earth is headfull by this downer, and as it has found that the series of the lated in the series of the lated in the parelled series of the lated in a series of greater downers. By the measure that of a payle date of sinks, the earth is headfull by this downer, and as it family on one skyly the numbrate at the seawide, while the former has the muses of forwarding or shretling his copy by the handle.

Can anything be better?

But I will not trouble you any more with my stories about balloons; only, for the benefit of my friend Coxwell, I should like to set before him a few of the benefits of ballooning, as I intend to carry them ent.

A balloon to light all England, by fixing it at such an elevation as to enable a strong and piercing light to illuminate the country round, from Land's End to John o' Great's.

A balloon with which to discever new countries, by passing over hitherto inaccessible barriers.

3 L 2

A balloon with a large reflector and burning-glass, to bring a little summer heat round at Christmas time.

A balloon for delicate constitutions, to change its position according to the exact climate required.

A balloon to distribute advertisements all over the world.

A balloon for the Pre-Raphaelite artists, by which they may travel up close to the wonderful effects they are so fond of.

A balloon for people who want to keep out of the way; and

A detective balloon, by which the policemen can look down other people's chimneys, and through other tecole's kvijzhta, and so find out "all about it."

people is skylights, and so had out "all about it."

I will not mention the thousand and one other and better purposes to which I propose putting bulloons, but
I think that while they give artificial sunshine and artificial rain, howe without property-tax, and travelling without steam-engines, perhaps I have bed you enough for the present.

At all events, if Corwell will allow me, I mean to take Mr. Glaisher up to the moon in December, just when the "man" is getting his crop in, which will give Glaisher something che than wet builts, zeron, and short breath, to talk about to the British Association when they meet.

#### LINES TO A WILD DUCK.

A duck has been immortalized by Bryant—
A wild one, too,
Sucrely be beauted the creature blide and busyant.

Sweetly he hybrided the evadure boths and not Cleaving the blow.

But whose says the duck through ether flying, Seen by the bush.

Seen by the bank, Equalled the convon-back before me lyin;, Tells a orange, Done to a turn! The firsh a dark carnation, The gravy red. Four slices from the breast: on such a ration

Beyant, go to! To say thy lyric phost duck, Traced on the sky, Was worthy to be named with this fine record duck, Is all my eye!



"OBSTANTIA PUNDIT NUMBERAL"

### CHAPTER XII.

"PROGRESS: OR REVIEW OF THE PAST, AND THE HOPES FOR THE FUTURE."

"To everything there is a season, and a time to every purpose under the heaven."

ECCLEMANTS iii. 1.

CONTICUES TIPES, TIME AND SPACE—MANY REGIONS FOR ARE RAPPINGS—THE CONTENER/OSS OF THE VALENCE NATIONS THAT FOR THE VALENCE NATIONS HAVE THE VALENCE NATIONAL THAT FOR THE PART OF THE VALENCE NATIONAL PROPERTY OF THE VALENCE NOTATIONS.

SPACE (A SENTENCE FROM CONTUCIOS).

DEFFACE ist der Schritt der Zeit: Zögernd kommt die Zehunft bergesogen, Piciischnell ist das Jetzt entfloren, Ewig still steht die Vergangenheit.

Dreifach ist des Raumes Masz, Rasties fort ohn Uniterlam Streek übe Jahoys fort ins Weite, Earlies gienzet sieh die Breite, Grundlos senkt die Trefr sich. Dir ein Bild sind ale gregeben i Eastion vorwurts maast die atreben, Nie enmidet stille stebn.

Bastles verwirts moast da streben, Nie ermidest stultu siebn, Willied du der Veldendung schu; Moast im Bertied olch enfollten, Fold sich dir die Well gestälten; In die Tiefe samme des steigen, Nur Bebarrung führt zum Ziek, Nur Bebarrung führt zum Ziek, Nur der Faller führt zur Klarbeit, Und im Abgrand weben die Wahrbeit. Benntann der Schuler und Klarbeit, Threefold the stride of Time, from first to last i Leitering alow, the Fature creepeth— Arron-swift, the Present asceptibe— And moticuless for ever stands the Past.

A threefold measure dwells in Space-Boaless Lorgh, with frying mee; Stretching forward, never endoth, Ever wikning, Broudh extended by Ever groundles, played descruched. Types in these then deat peners ju-Beathwa, convent then must press pu-Beathwa, convent then must press pulearly support the property of the press of press of

Tis the progress gains the goal;

Ever widen more its bound; In the Full the clear is found, And the Truth—dwells under ground. Sta Enwann Bruwan Lytrox.

HAVING now reviewed the most salient points of all that has been accomplished and suggested with regard to acrosstation, though many valuable ideas may have escaped us, let us now recall briefly the general progress of science, and the important results which we may now fairly anticipate for this branch of it.

"Man's twofold nature," says Carlyle, "is reflected in history. He is of earth, but his thoughts are with the stars. Mean and petty his wants and his desires, yet they serve a soul thoughts which misser his minimum and his desires, with thoughts which sweep the heavens, and wander through tetrnity. A pigmy standing on the outward crust of this small

planet, his far-reaching spirit stretches outwards to the infinite, and there alone finds rest. History is a reflex of this double life. Every epoch has two aspects, one calm, broad, and sedenn, looking towards eternity; and the other agitated, petty, vehement, and confused, looking towards time."



THE LIAR, OR A FOOT-PRINT OF THE PAST.

With what line or series, then, shall we cannect the Paradacph of the oddie? There is no motion of which act extendingsy aminal could not partate. It could walk awin, and M, ken power great spaces, and float in the air, sustained as by a parachute; and if its institute were commensurate with its powers, it would stand out wholly see an assuantly, having wither producesors are descendant.—Navaget's System of the 150-th.

Methought I saw

Life swiftly treading over endies space,
And, at her foot-prist, but a byzone pace,
The ocean-past, which, with increasing wave,
Swallow'd her steps like a purming grave.
TEXXION.

#### George Combe says:-

At the time of the Roman invasion, the inhabitants of Britisn lived as awages, and appeared in printed skins. After the Norman computes, one great of the mation was placed in the combition of serfs; condenued to labellocal like beast of burden, while the other devoted itself to war. The coldes fought lattles during the day, and in the night probably drawnals of blookhold and broke. Next omes the age of chirally. These generations severally believed

their own conflicts to be the highest, or at least the permutent and inertiable be of Man. Now, however, have come the prevent reaspectured of select, in which sillines of near asked up in color and list and other names factories for to or breize bear asky; others know under ground in mine; others plough the fields it while thousands of higher rank pass their lives in fivelous ansections. The chementary principles of the luman constitution, both bolly and neared, were the same in our plained ancestors, and is their divisions observables, as monthering, and money-gathering childraw. Yet how different the extensed relementates of those neveral generalized II, in the aways state, the nextel feasible of Man were in harmony amang theaselves and with the extense characters, been much then two capitals at the happines of which has nature was capitals, and have early when he changed his condition; if the institutions and restores of thought of which the properties of the superior of which the condition is provided in the condition of the superior of the superior

Every up, veccellingly, has builted that it was not in possions of continuous at all the question present instell I haven nature has reviewed a definition constitution, and it one arrangement of external elementations in unwe mixed to yield it gratification than methor, what or that constitution and that strangement? No one money that the philimphers has accreded in giving up a sufficiency asserts to them questions. If we in British have not reached the limits of attainable perfection, what are we next to strang!? Are we not our posterity to spin and wave, helid allyin, and specifies the connection, what has the production to which has no neight, and to present in these lakeurs as the highest off! If the off time? If not, who held plot us is our future region at the even of stratum, only of which cut it shinked all only in

The British people are here cited as a type of mankind at large; for ia every age and every cliane, similar paces have been run, with similar conclusions. One answer may be returned to these inquiries.

Man is apparently a progressive being.



" KARTH, WATER, AM, FIRE-SOLVE MY THIS RIDGER WHO CAN?"

leh wohn' in einem steinernen Haus, Ibs lieg' ich verbergen und seifalst; Dech sich nete herver, jeh eile herven, Gefordert mit ererner Waffe. Merk haus der Jahren berwingen. Merk haus deis Antem berwingen. Ein Begentropfen sehon ausget nicht efn; I Dech mir weskene im Stege die Sekwingen. Wenn den michtige Sekweiser sich zu mit geselt, Wenn den michtige Sekweiser sich zu mit geselt.

In a Dwelling of stone I control
My existence obscure and asleep;

But forth at the clash of the steel, From my slumber exulting I leap! At first, all too feeble for strife, Thou hast but to breathe and I day

A drop would extinguish my life— But my wings soon expand to the sky! Let the asight of my Sister \* afford Its aid to those wings when unfarf'd, And I smow to a terrally Loni.

Whose anger can ravage the world.†

San Ecwann Bulwen Lyrron.

\* The sir † Fire.

We might continue; but lately there have been many popular writers who have shown the analogy between the growth of the mind of a nation, and that of a man from his childhood; and the wider the survey both of centraries and countries that these works include, the more apparent does this become. We can therefore only venture to call the fact to mind whilst we make note of the chief contributions of various nations to this division of science.

#### II.

To FRANCE, as we have seen, belongs all the "richt" of this branch of knowledge, so well saited to the brilliance, vivacity, and showiness of her character; but let us accept also the judgment of one of the ablest of her writers on it, when he speaks of the case with whele sle is disappointed:—"(0"il est malherresement dans les habitudes de l'esprit français de manquer de persèvrience; que souvent il haiso échapper; el passer à l'exciter les découvertes faites chez lui; et que, pour les accueillir, il leur faut en quelque sorte le baptène de l'approbution étranciers.

In EXGLAND the most important and necessary element in this acquisition was made by the researches of Cavendish, Black, and Watt, who discovered the specific gravity of gases, and the decomposition of water.

But let us not forget ITALY, as we owe to her many ideas. I will therefore quote Draper's 'Intellectual Development of Europe,' wherein he speaks justly, I think, of the beautiful peninsula in these words:—

In this scientific advancement, among the triumphs of which we are living, all the nations of Europe have been engaged. Some, with a venial pride, claim for themselves the glory of having taken the lead. But perhaps each of them, if it might designate the country-alas! not yet a nation-that would occupy the succeeding post of honour, would inscribe Italy on its ballot. It was in Italy that Columbus was bern; in Venice, destined one day to be restored to Italy, newspapers were first issued. It was in Italy that the laws of the descent of bodies to the earth and of the equilibrium of fluids were first determined by Galilee. In the cuthedral of Pisa that illustrious philosopher watched the swinging of the chandelier, and observing that its vibrations, large and small, were made in equal times, left the house of God, his prayers unsaid, but the pendulum clock reinvented. To the Venetian senators he first showed the satellites of Jupiter, the crescent form of Venus, and, in the garden of Cardinal Bandini, the spots upon the sun. It sees in Italy that Succions invested the thermometer; that Torrivalli constructed the barometer and demonstrated the pressure of air. It was there that Castelli laid the foundation of hydraulics, and discovered the laws of the flowing of water. There, too, the first Christian astronomical observatory was established; and there Staneari counted the number of vibrations of a string emitting musical notes. There Grimaldi discovered the diffraction of light; and the Florentine academicians showed that dark heat may be reflected by mirrors across space. In our own times Melloni furnished the means of proving that it may be polarised. The first philosophical societies were the Italian; the first botanical garden was established at Pim; the first classification of plants given by Cavalpinus. The first geological museum was founded at Verona; the first who cultivated the study of fossil remains were Leonardo da Vinci and Tracasta. The great chemical discoveries of this century were made by instruments which bear the manes of Galvani and Volta. Why need I speak of science alone? Who will dispute with that illustrious people the palm of music and painting, of statuary and architecture? The dark cloud which for a thousand years has hung over that beautiful peninsula is fringed with irradiations of light. There is not a department of human knowledge from which Italy has not extracted glory, no art that sho has not adorned.

Germany has aided as with poetic conceptions, but feebly expressed by the vignettes that adorn this work, and more powerfully by the pen of Schiller, breathing forth some of the strongest of human aspirations. They have also welcomed those aeronauts of France and England who have exhibited to them the imperfect machines they possess,

AMERICA also has assisted by practical observations that have resulted in an excellent volume by the experienced Mr. Wise.

This is, as far as the information at my disposal extends, the extent of the outline of the contributions of the nations that form our present Commonwealth.

From the annexed list of the first five hundred known aeronauts throughout the world, some of whom have devoted their whole lives to the science, and a few have fallen a sacrific to their experiments, we see how large is the majority of Englishmen. This list was carefully compiled by M. Depois Delcourt in 1824, much esharged by Monek Mason in 1837, and again revised by M. Depois Delcourt in 1814, and is, I think, nearly correct.

It will here, perhaps, be opportune to notice the extent of the development which the second accordation has hitherto received, and the similarity that exists between it and the progress of other sciences,

III.

The following are the remarks (written about 1838) that commence an "Inquiry into the Uses and Capabilities of the Balloon-projected Voyage across the Atlantic":—

It is no observation not undescring the attention of the philosophical inguirer, how subban it hes hopposed that the observal discourse in the act and actience he been connementate in point of the with the bellions which has ecompanied their subsequent cover of precisial application. Of the inventions which have most contributed to raise the standard of withinkins and the precisis of which in history from, as it were, expected improvement in the need and excell condition of hashind, how for them are whose first amountement has experienced to essuffered in large way equivalents to the reals they are taken been described in large way experienced by the contribution in large way equivalent to the reals they are taken the contributions and the reals are also also the contributions of the contributions are suffered to the contribution of the contribution of the contribution of the contributions are suffered to the contribution of the con

Of the former of these positions, the ricumstances attending the rise and progress of the theory great expines of modern systems, of max, in literature, and in consucros—questron, the sart of printings and the norther agency of steas, safest sufficient literaturin, valide, in exceptification of the latter, we need only refer to the still more recent discovery of the science of surroution. Greated with a mirroutiny and former out applicane never before convoled to the most cashed effect of human laguranty or entering the product of the produ

And z'y, a new instanting the since nevertical exaggration of these restricants, some spekgy may be found for the errorsees unstalleroism prevalently restricted upon a nature appearedly franky that when the mercing on the terrorsees are designed in the professor of the professo

novements of the atmosphers, ontall be calculated or assortation, were as little parmed that for were in a condition to promotive year to equalities of any project of the natural studied, so, or was to expect that a militization conclusion could be arrived at (without sorbal superiment) by the new force of a pieri investigation. Hence the various precisal naturely made to assertion it is efficiency of shears, the proposed or which could have been determined much more satisfactority (because, independent of all considerations of the socuracy or inaccuracy of the mentation) by the process of mathematical declosities.

In England this enthusions, it is true, never two to the many inich, and consequently never experienced the same revaluion. More accustomed to weigh consequences, and ever disposed to doubt almost in inverse propertion to the magnitude of the advantages to be attained by mercous, the very grounds of its recommendation to a loss probestial people, operated to suspend the judgment and abute the expectations of the inhabitants of this country, and it early because a doubten in Dictation to deep vit in recoverious and ristudies be unretained as much almost as our

more mercurial neighbours were disposed to fall into the opposite extreme.

Such we know is the nature of man, especially when engaged upon a matter of engrossing interest, that no declaration of opinion founded upon a partial development of the features of a case will ever avail to produce conviction, or determine his efforts or expectations. Where more mechanical difficulties are all that impede success, no arguments indeed are likely to prove satisfactory. Difficulties which are insurmountable by one man under one set of circumstances, might prove no difficulties to another differently circumstanced and differently endowed. At all events, no decisive negative can be imposed upon the success of an undertaking to the accomplishment of which a higher degree of knowledge and more extended resources are all that are required. Indeed, it is from viewing the question of acrial propulsion in this light-namely, as one of more mechanical prowess,-that may be said to have arisen the contrariety of opinion which has bitherto existed, and still, in a less degree, continues to prevail upon the subject. To be able to construct wings or motive organs of similar effect, and adopt a power sufficient to set them m motion, either in the way practised by birds, fishes, or by vessels propelled by steam (or otherwise, as the fancy of the projector may incline), is, when viewed apart from any particular limitation, a feat in which many persons might fail, and yet one more skilful than the rest might still hope to succeed. When however, upon taking into consideration all the requisitions of the case, we find, by strict mathematical deduction, that, in order to effect the end desired, it is necessary that these usings or other organs must be of a given especity, and operate according to a given force, and that this capacity and this force are such as neither the materials we possess, nor the natural powers us can command, are competent to create, we redeem the question from the class of mechanical difficulties, and assign it a place in that of natural impossibilities.

Such then appears to be the case with regard to the conversion of the folion into a mass of transport applicable to the collegar purpose of life, and we are willing breve to express our scheerdeligenate to Mr. Mono for having, in his work upon acreation, recordly published by Mr. Westley, sublished the matter in that Mono for having, in his work upon accretion, recordly published by Mr. Westley, sublished the matter in that pills. It transaction all the arguments by which this wave of the case is approach would, are where airredy stands, careed the limits here allebted to are while to repeat a part only would have the point as munification; and and resistent the consideration that were conducted to exacting.

We have put in italies the just conclusion to which a clear and candid mind arrived at after residing Mr. Monck Mason's calculations; but we have already home how erroscous these were, since we can now affirm the practicability of avrial uneignion to be demonstrated by mathematical deduction. [See 'Etuskes sur l'Aérostation, par M. Marcy Monge'; for extracts, p. 336 of this work.]

Mr. Coxwell, after twenty years devoted to the study of this science, expresses himself as follows in a number of the 'Acrostatic Magazine' for 1859:—

We who camine screetation historically, we not surprised that quick and powerful minds should have been need to high experients, and yet domes to disappointment. But we should be quite sensionable if, after all we have read of the rise and progress of the arts and sciences, this particular one should deviate from the regular orders and develop heal's that carnedinary process; ye wedge, so we do, that inventions and deveroive generally failure one uniform course, and only yield their transars, as do published befor maggion, after hard exercises and unitiring offers. There are, of course, exception, both as to the arts and to gold-adocting but we find it the rule; and very



There is no server to the leasure transport in the transfer is admitted in a requestion from the least to the first the transfer in the second transfer in the s

supremely ordered it is, especially as it applies to aerial locomotion, for I have no hesitation in affirming that the advantages likely to accrue from unrestrained intercourse through the atmosphere are so great and exalting, that the world is hardly yet prepared for such a consummation. If astronomy, geology, steam-power, electricity, and nantical science cannot boast of having made one bound towards perfection, why should ballooning? We have only just succeeded in making ships go against the wind, and why should we despair of mastering an acrisil vehicle? The difficulties to be surmounted are well understood, and for a time baffle ingenuity; but I would urge renewed attempts, for remember, it is not eighty years since the first balloon travelled the air, and if we could now inspect a specimen of a boat constructed eighty years after men began to venture on the water, depend aron it we would sooner gross the Atlantic in the 'Great Eastern' than venture to Gravesend in the primitive pigmy of our forefathers. Bullooning as an art, is, I am convinced, steadily advancing; and although the unsuitisted may not observe much progress, because the machine does not strikingly deviate from the wind, yet the various apportenances gradually undergo improvement, and in a short time, I have no doubt that balloons, like the old men-of-war, will be cast aside for new models; and then, just as the application of steam requires a reconstruction of our war vessels, so will some new power demand a similar alteration for vessels in the air; so that if balloops cannot be managed, clongated acrostats may, and the difficulties which appeared insurmountable at the beginning of the nineteenth century may be at last dispelled, and the great high-road to all the nations of the earth (the atmosphere) may be travelled triumphantly.

Let us draw attention to the oldest and sublimest of the sciences, and learn from the asterownents of her pioneers, which have been so eloquently recorded by Niehol in his 'Solar System,' and other works, what we may in some degree anticipate for aerostation:—

"It is seldon easy to ascertain why or how a new truth is revealed,—that majorite event ansulty occurring when old systems seem to have reached their climar and achieved perfection. When, however, the still small voice does come, it is one of dread. The accomplished part of the world feels as in an earthquake; although the deserts any rejoive at the tringin [glaft."

First, Operaion. "He threw from him the weight of agen, and quietly asked whether that femionental teach, which aware that the earth is motion-box, might not be false. The mental effort required, even to lookstace on point which all amotion had up to that moment undoubtingly believed, and which had now invoces itself with every mode of thought, was an achievement for the lolliest order of genius; the question being pat, it required only superior has to the moments taken to feel live! it to its encellulosism."

Thes, a Tycho and Kepler. "It is usually assumed as an axiom, that when Science desires a great man to accomplish some specific object, one with faculties altogether adequate is certain to appear and achieve his mission; the two men here spoken of were, in this case, nobly adapted to the required task, but each only to his own department of it. The genius of the Dane lay exclusively with observation, in which field he stands beside Hipparchus; while, on the centrary, Kepler thirsted after analogies and relations. Tycho had no power to theorise; and when he attempted it, the failure was miserable. Kepler's enthusiasm made his whole life that of a theorist, divided between the pursuit of governed relations, and the discovery of some of the noblest truths in the science of astronomy; -- an enthusiasm, however, most diverse from that of the common theorist, who usually seeks not after truth but distinction, and is pleased no better with a great discovery, than a startling and noisy pandox: for, springing from the finest genius, it prompted him for ever to search out real relations, and, until those relations were discovered, never to be at rest. If his ardent, speculative, and often erring mind, had been truly in union, in the same person, with the faculties of the calm, observant, and unphilosophical Tycho, it could not have otherwise befallen it, than to be an instrument of importance scarce calculable towards the reformation of all science: and the truth is, the imperfect union which did take place—the happy association, until Tycho's death, of the two persons, and Kepier's subsequent and most pions devotion to the memory of his patron and master-has produced a period second to none in the importance of the truth it revealed, and which therefore will always be illustrious."

Kepler says of himself after making the discovery of the Unity of Structure in the Planetary System:—

. . . . It is now eighteen months since I got the first glimpse of light, three months since the dawn, very

for days done the merical one, none absolutely to go soon, based out upon now. Nothing holds not 1 will insiding the large of the production that I have anothen the gallets reason in any mored flay; 1 will triming over manifold by the housest confined not I have anothen the gallets reason the Reggrids, to built up a thieranche for my God for every from the confine of Reggrid. If you forgive no. I, myless if grids on agent, it can be not it will do its conf, the book is written, to be read offerent now or by posterity— I can me it which; it may well wait a centrery for a reader, as God has waited six thousand years for a colorier of

The apple falls to the ground, and Newton unravels the mystery, completes the first step of a boundless research, and acknowledges that he is "but as a child, standing on the shore of the vast and unexplored ocean, and playing with a little pubble which the waters have washed to his feet:"—

SOF ALL TROSS WITH ELECTORIES, RECORDS—
ELECTOR ALL TRESS ELECTORIES, THE SERVICE SERV

Do we not find encouragement here? Are not all sciences strengthened by the completion of so beautiful as mark. May not we therefore anticipate for nerotation future progression as definitely marked? Or must it be with it, as with the science of marine narrigation, that the donations of the most valuable inventors (I tail nearly and discoverery) are lost among the thousands of patents that with gradual steps have caused that display of skill and incentily that we find in a dockward?

#### IV.

For a glimpse of the future, analogous to our Second Chapter, I will quote Victor Hugo's 'Vinctième Siècle' ':—

## PLEINE MER.

Likhters; on an side quit de termible qui prouble; Leveri ; Checurdi Tutte comma le monde; Leveri ; Checurdi Tutte comma le monde; Protent la fine; parinet di l'util part d'enfonce; Le males qu'en viui diversi, venit paure ; Le males qu'en viui diversi ; mel paur d'enfonce; Le males qu'en viui diversi ; l'en provinci ; Les réportes sons l'arche et l'ense sons le colombe; Les mayes qu'en l'engel c'illes qu'en sons le colombe; Les mayes qu'en l'engel c'illes qu'en premit l'ense qu'en le l'en supre qu'en l'ende de l'étages mass le mais, l'en cette l'ense sons le de l'étages mass le mais, l'étage de l'entre de l'étage qu'en l'entre l'entre sons l'entre l'entre de l'internation de l'entre sons l'entre l'entre d'internesse moi de l'internesse mil. L'entre d'internesse moi de l'internesse mil. Un grand cachalot mort à caroane de fer. On no mit quel codaver à vau-l'esp dans la mer; (Euf de titan dont l'homme surnit fait un pavire, Cela vogue, cela nage, cela chavire : Cela fut un vaisseun; l'écume aux blancs amas Cache et montre à grand bruit les tronçous de sept mâte ; Le colosse, échoué sur le ventre, fuit, plonge, S'engloutit, reparait, se ment comme le songe; Chaos d'agrès rompas, de pontres, de haubans ; Le grand mit vaincu semble un spectre aux bras tombanta L'onde passe à travers ce débris; l'eau s'engage Et déferle en hurisat le long du bestingage, Et toursocute des bouts de corde à des cresupons Dans le ruissellement formidable des ponts ; La boule épenducaent furieuse encong-Aux deux fiance do vaissent les cintres d'ette care

<sup>\* ·</sup> La Légrade des Siècles :

Où judis une roue effrayante a tourné ; Personne : le néant, froid, muet, étoené : D'afferux cenons rouillés tendent leurs cons funestes : L'entre-pont a des trous où se dressent les rustes De cipa tubes rareils à des clairons réants. Pleins jadie d'une foudre, et qui, tordus, béants Ployés, éteints, n'ont plus, sur l'esu qui les balance Ou'un poir vouissement de pult et de silence : Le flux et le reflux, comme avec un rabet, Dénude à chaque copp l'étrave et l'étambet Et dans la larse en voit es débattre l'échine D'une nayatériouse et difforme machine. Cetta masse sous l'eau ri-le, faptême obscur, Des putréfactions fermentent, à com sur. Dans ce vaisseun perdu sons les vagues sans nombre; Desaus, des tourbillons d'aissesux du mer ; dans l'ambre, Denone des millions de poissons esmassiers. Tout à l'entour, les flots, ces liquides aciers Méleut leurs tournolements monstraeux at livides. Des espaces déserts sons des espaces vides. O triete mer | sépulcre où tout sumble vivant | Con deux athlètes faits de farie et de vent, Le tangage qui bave et le roulis qui fume, Luttant sur or radeau funèbre dans la brume. Sage trêve, à chaque instant arrachent quelque éclat De la quille on do pont dans leur poir pugilat ; Par moments, su zénith un nuage se trove Un peu de jonr ingubre en tombe, et, sur le proue, Une toeur, qui tremble au souffie de l'antan, Blème, éclaire à deml or mot : Léveatman. Pois l'apparition se perd dans l'eau profunde ; Tout fuit.

Léviathan; c'est là tout le vieux monde, Apre at démesuré dans sa faure laséeur; Léviathan, c'est là tout le passé; grandeur, Horreur.

Le dernier siècle a vu sur la Tumise Croître un monstre à qui l'esn sans bornes fat promise Et qui longtemps, Babel des mers, aut Lendre entier Levant les yeux dans l'ombre au pied de son chantier. Effrovable, à sept mâts mélant cinq cheminées Oui bennissaient au choc des varges effrénées. Emportant, dans le bruit des aquilons siffants, Dix mille bennes, fournis écurses dans ses flancs. Co Titan se rus, joyeux, dans la tempéte; Du dôme de Saint-Paul son mût passuit le fuite ; Le sumbre esprit humain, debout sur son tillar, Stopefinit la mer qui n'était plus qu'un lac ; Le vieillard Océan, qu'effaronche la sonde, Inquiet, à travers le verre de son cude, Regardait la vaisseau de l'homme grossissant ; Ce valueran fot our l'onde un terrible passant : Les vagues frémisatient de l'avoir sur leurs croupes ; Ses sabords mugissaient; en guise de chaloupes. Deux navires pendaient à ses portemanteaux ; Son armure était faite avec tous les métaux ; Un prodigieux ctble ourlait sa grande volla ; Quand il marchait, fumant, grondant, convert de toile, Il jetnit un tel råle à l'air éponyanté Que toute l'esa trembinit, at que l'immensité Comptait parmi ses bruite ce grand friescu sonore; La noit, il passait rouge ainsi qu'un météore;

Sa vollure, où l'oreilla entendait le débat Des souffies, subissent ce grécurent comme un bât, Ses hunes, ses grelies, ses palans, ses senures, Étalent une prison de vents et de murmores : Son ancre avait le poids d'une tour; ses parcis Voulaient les flots, trouvant tous les ports true étroite : Son ambre hamiliait au lois toutes les proues : Un télégraphe était son porte-voix ; ses roues Forgosient le sombre mer comme deux grands martreux; Les flots se le passoient comme des piéclestant Oh, calme, carinlorait on triomphal colosse; L'abiane s'abréguait sons sa lourdror véloce ; Pas de lointain reve qui poer lui pe fût pele : Madère apercevait ses mâte; trois joure après, L'Hekia l'entrevoyait dans la lucur polaire. La bataille montait sur lui dans sa colora La rurre était sacrée et sainte en res tempalà-Riso n'éculait Nemrod si ce n'est Attila : Et les hommes, depuis les premiers jours du monde, Sentant peser sur nux la misère inféciele, Les pestes, les fléanx luguères et railleurs, Cherchant quelque moyen d'anciedrir leurs deuleurs, Pour établir entre eux de justes équilibres, Pour être plus heureux, meilleurs, plus grands, plus libres, Plus dignes du ciel pur qui les daigne éclairer, Avaient imaginé de s'entre-dévore Ce sinistre vaisseau les aidalt dans leur eroyn. Lourd comme le dragon, prompt comme la couleuvre, Il accerrait l'Océan de ses ailes de feu ; La terre s'effravait quand sur l'horizon bleu Rampait l'allougement bideux de sa fornée, Car n'était une ville at c'était une armée : See payers fourmillaient de mortiers et d'affitte. Et d'un hérissement de hataillone confos ; Ses grapoins mensosient : et, rour les abcelaces, On vuyait sur ses ponts des roulesux de cordaços Monstructz qui semblaient des bons endormis ; Invincible, en oes temps de frères expensis, Soul, de toute nan flotte il affrontait l'ésseute Alusi qu'un éléphant au milien d'une meute ; La bordée à ses pieds finmait comme un engens, Ses flancs englectissaient les boplets impuissants. Il allait browns tout dans l'obscure miliée. Et, quand, épouvantable, il lâchait as volée, On vorsit fambover son colosed beauter. Par deux milla canons brusquement empourpré. Il méprimit l'autan, le flux, l'échur, la brume. A son awant tournait, dans nu choos d'écurse, Une espèce de vrille à trover l'infini ; Le Malström a'apaisait sous sa quille aplani, Sa vie intérieure était un incendie : Plamme au gré du pilote aparece ou grandie ; Dans l'antre d'eù sortait un vaste mouvement, An food d'one fourasise on voyalt vaguement Des êtres ténébreux marcher dans des nuées D'étipoclies, parmi les braises remnées : Et pour fime il avait dans sa cale un enfer. Il vogueit, roi du gouffre, at ses vergues de fer Ressemblaient, sous le ciel redoutable et sublime. A dos sceptres posés en travers de l'al·lima ; Ainsi qu'on voit l'Etsa l'on voyait ce steamer ; Il était la montagne errante de la mer ; Mais les beures, les jours, les mois, les ans, ces ondes, Out passé; l'Océan, vaste, entre les deux mondes,

A rugi, de brouillard et d'orage obacuret ; La mer a ses étuties cuchés, le tempa assus ; Et maintenant, parant les poétodeurs farouches, Sous les vantours, qui sont de l'Altree les moothes, Sous le unage, au gré des souffles, dans l'oubli De l'infisit, dont l'oubre affraux ent le repli, Sans que jamais le veut sutour d'ulle s'endorme, Au millèm de Rots ouler soul l'égrer écormel

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Euncien morale, l'ensemble étrange et surpressant De faits sociates, morte et peurire maintenant, D'ob rectif ce navire anjount hoi seux l'écume, L'ancien monde, mosé, l'ui, plougé dans l'ancertame, Avant tous les Béaux pour vents et pour typhone. Construction d'airsin aux résure protonds, Ser qui le mai, for til, exchain la teve inflane, Pleis de funde, et un par une hybra de finame, La Hissa, il resemblable to combre vaisseau.

Le mal l'ovnit morqué de son funèbre sceau,

Ce monde, enveloppé d'une brume éternelle, Était fatal ; l'Espoir avest plié son sile ; Pas d'unité; divorce et joug; divernité De langue, de mison, de code, de cité; Nul lien, nul faisceau; le progrès solitaire, Comme un serpent coupé, se tordait sur la terre, Sans monvoir réunir les troncons de l'effort : L'esclavage, parquant les peuples pour la mort, Les enfermait au fond d'un cirque de frontières Où les exeduient la George et la Nuit, bestiaires : L'Adam slava luttait contre l'Adam germain; Un genre humain en France, un autre genre humain En Amérique, un autre à Londre, un autre à Bome ; L'homuse au dela d'un pont ne connaissait plus l'homme ; Les vivants, d'ignomace et de vice chargés, Se trainment; en travers de tout, les préjugés;

Les expensitions étaient d'Épons menistes frembles d'âtants les qu'elles étaient plus saintes; Quel crisean soupressenx et soir qu'ou Alocana I. Quel crisean soupressenx et soir qu'ou Alocana I. La tei d'un peuple dust cher l'autre preple un crime; La tei d'un peuple dust cher l'autre preple un crime; Les risis fisient des borns; les dévins désaires des marrs; Na moyen de finants du mit d'hautache dossenx ; yeu de l'autre de l'autre de la contrait de la comme de l'autre de la comme de l'autre d'hautache dossenx ; L'autre de l'autre de l'autre d'hautache dessenx ; D'autre mole saurage ou d'un depuis harbars; Le, quant à l'avenir dévine d'âter le .

20TH CENTURY.

Le vent de l'infini sur ce meude souffia.
Il a sonbré. De fond des ciena isaccossibles,
Les virunts de l'éther, les étres devisibles
Confacient épars sous l'obscur firmancent,
A cette heure, proside, reguelent firmancent,
Guisparition dans la nuit redouable,
Qu'est-ce que le situatus a fait du grain de sable?
Cela fait. C'est panale! cela oute plus ét.

Ce monde set usert. Mais quel I Pontume est-il nort aumi ?
Cutte forme de la diferentiane, Ta-t-tell
Luis-state mesperté dans l'enjure derrella?
Luis-state mesperté dans l'enjure derrella?
Luis-state mesperté dans l'enjure de la laisLuis-state mespert dans l'enjure de la laisLuis-state mesperte dans l'enjure de la mostit.
Pau un equif virunt sur l'ende de la mostit.
Pau un equif virunt sur l'ende de la mostit.
Ed-es que l'enjure de la luis-cutte.
Ed-es que l'enjure de la luis-cutte.
Ed-es que l'enjure de la luis-cutte.
Ed-es que l'enjure l'enjure de fait l'enjure l'enj

Regardez là-baut.

#### PERIN CIEL.

Lain date les profesiones, hors des naties, hors den flet, Dans un deutsternet de custes, qui haben un fest de parties de custes, qui haben un fest de confesione des les profesiones. Veir nucleans den meri la cleiste allégranes, Les poists veque es confesi apparatis l'anne le veut, Dans l'expos, ce poiste se ment; il set vivant; Il na dencode, restoure și fisit ce qu'il veut faire; Il napenche, il prend farme, il vient; c'est une spidre; Cert un inscriprendule et surpreneut vissiones, Globe comma le mordes et comma Valgie eleisne; Cett un navier en mordes. Ou? Dess l'éche sublime le Cett un navier ne mordes. Ou? Dess l'éche sublime le

Bleva I on credit vier planer um norresso d'une cimine. Le haut d'enu mentregue, a sons l'evile étaile.

Frès des alisse et c'est tout à comp navelé?

Guelque le beur summes étant d'ens les destitus sonnés, ;
La non errante évet un valueur disconsée ?

La noire errante évet un valueur disconsée ?

La taleur pour blus a-cit juit no contre sur vente .

L'antique poble a-cit juit no ceutre sur vente .

L'antique poble a-cit juit no ceutre sur vente .

L'antique poble a-cit juit no contre sur vente .

L'antique poble a-cit juit no commisse .

Entre voire, militerante dompfe, la reconsisse :

Entre l'antique d'entre des des dates par l'éclair Pour laite un eagel éclaire avoir d'il l'être .

Du haut des châns annes vient-il une visite? Est-ce un transfiguré qui part et resusacite, Qui monte, délivré de la terre, emporé Sur un char volant fait d'extace et de chard, Et se rapproche un peu par instant, pour qu'on voie, Da fond du moude nort, la figire de sa bie?

Ce alest pas un morreau d'une ciane ; en l'est. Ni l'antre di cont tevra de la Fable tendit; Ni le jun de l'échér; en c'est pas un famidien Venn des produceures aurentes du ditone; Ni le myomeneure d'un angre qui s'en va, Blees de quelque tombene hand, ven s'écherals, Ni s'en de ce qu'en songs on dans la fièrer on notame. Qu'ente-ce que ce navire impossible 2 Cest l'houmain.

Cest le grande révolte oblimante à Dieu I La sainte insue cel du facia pourse bien I Cest Isia qui déclirie épenduneux son voile f Cest das qui déclirie épenduneux son voile f Cest du nésia, du bois, du chauvre et de la toile, Cest de la pessurieur déliviée, et volant; Cest de la pessurieur déliviée, et volant; Film, armehant l'argité à sa chaine éternélle ; Cest la messième, beservese, adèlire, evanet en elle De l'ouregan humein, et planent à travers L'immence étonnement des cioux enfin ouverts.

Andace burnaine 1 effort do capriff sainte rage 1 Effraction enfin plus forte que le ençe 1 Que fant-il à cet être, seron su large front, Pour vaincre ce qui n'u ai fin, ni bord, ni fond, Pour d'emptre le rent, trombe, el l'écume, avainche? Dans le cel une toite et sur une planche.

Jadia des quatre vente la foreur triomphait; De oos quatre chevaux échappés l'hommo a fait L'attelaga de aos quadrigs; Gréne, il les tieut tous dans as moto, firr occher Du char efricu que l'éther voit auscher; Mincle, il gouverne un proxige.

Char merreilleux I son nom est Delivanon. Il court. Pris de lui le rander est leut, le flocto local ; Le dain, Péparieir, la pantière, Sont encor là, qu'au loin seu ombre a déjà fui ; Et la locomotive est reptile, et, aons lui, L'Ardre de famme est ver de terre.

Une manique, un chant, sort de son tourbillon. Ses coedages vileants et remplis d'aquiton Semblect, dans le vide où tout sombre, Une lyre à travere laquelle par moment Passe quelque fame en fuite au fond du firmament Et mélée sur sonffies du l'ensère.

Car l'air, c'est l'hymne épara; l'air, parmi les récifs Des nuages contant se groupes convulsits, Jette mille voix évoullées; Les finides, l'azur, l'effluve, l'éléacent, Sont toute une harmonie où fieltent vagooment On on anit quells auchtes Orphées.

Superba, il phane, evec un hymne en ses agris ; Et l'on croit voir passer la strophe de progrès. Il cet la nef, il est le phane! L'homme qu'fin preed son screptre et jette son bâton. Et l'on voir s'envoler le calcul de Neuton Montés sur fois de l'indane.

Le char baletant plonge et s'enfonce dans l'air, Dans l'éblouissement isopénétrable et chair, Dans l'ébler sons tache et sons rich ; Il se perd sons le bles des cleux décaussés ; Les caprits de l'azur contemplent affacés Cet embouissement stéendide.

Il passe, il n'est plus là ; qu'est-il donc devesur? Il est dans l'invisible, il cet dans l'inconne ; Il beigne l'homme dans le songe, Dans le fait, dans le vrai profess), dans la clarté, Dans l'océan d'en haut plein d'une vérité Dont le prêtre o fait un menscoge.

Le jour se live, il va ; le jour a'évanouit, Il va ; fait peur le jour, il accepte la nuit. Voici l'heure des frux anna nombre ; L'acure cè, vu du nadir, ce globe semble, ayant Sen large côte obseru sous lai se déplayant, une énorme comba d'ombre. La brumo redoutable emplit an loin les airs.

Ainsi qu'an crépacade on voit, le bog des mers,

Le pécheur, vesçus comms on rêve,

Trainant, dermer effort d'un long jour de sœurs,

Sa nasse oh les poissons fort de pales lucurs,

Aller et venir sur la grève.

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La Nuit tire du fond des gouffres inconnus Son fliet ch loit Mars, ob ayrome Vésus, Et, predant que les beures soment, Ce fiet grandit, monte, empit le ciel des soirs, Et dans ses mailles d'ombre et dens ses réseaux neirs Les constellations frisconnent.

L'aéroscaphe suit seu chemin ; il n'u peur Ni des págras du soir, si de l'érev rapeur, Ni des págras du soir, soi de l'érev rapeur, Oà les échim, luttant su foud de l'ombre ontre eux, Ouvrest sublicement dans le mage affeux. Dus caveraes de cuivra rouge.

Il invente unn route obscure dans les muits; Le silence bideux de con lieux inonès; N'arrète point ce globe en marche; Il passe, portant l'anome et l'univers en lui; Paix I gloire I et, comme l'eso judis, l'air aujourd'hui Au-dennu de son Bots voit l'arche.

Le saint navire court par le vent emporté
Avec la certitude et la repédité
Du juvelet cherchant la cible;
Riem n'en tombe, et pourtant il chemice en seusant;
Sa rondeur, qu'on duringue en hout conlusionant,
Semble un vente d'oiseau terrible.

Il vogue; les beusillards sous lui flottent dissous; Ses pilotes penchés regardent, su-dessous Bouges de l'ancre traine, Si, dans l'ombre, cè la trare avec l'air se confend, Le sommet de Mont-Blace ou quelque autre bas-fond No vient pas heurter so carico.

La vie est sur le pent du navire éclaisant, Le rayon l'enveys, la lomiter l'attend. L'hommer y fourmille, l'hommes invincible y fisanboia; l'eist d'ammes; un fier beuit de primance et de joie; Le cri vertigieux de l'erajoration il Il cours, combre, clarfe, chimère, vision I Reported-le perchant qu'il peane, il va si vite !

Gunna sakord d'un neilell un syrième, quevile, Leu niphrie de entre 'nomme dait nauchrie Quatte glabes of pend un immense plancher; Elle regine et find cisa in resta qui la berent; Un large et blince brander herioscult, que percent Den trappes, de fremant, elverante sur pid de frein, Fait un grand displemagen à ne promono d'arbina; il rimposa à lu ne seini quel Tuchea un blince La estré d'anappée herinales, se vante pide; La estré d'anappée herinales, se vante pide; De reporte pour partie un dibie et cuert l'illiment, Une embaldes de treuité, de nelseauxe, de mendies. Une embaldes de treuité, de nelseauxe, de mendies. L'esquif plane, encombré d'hommes et de baliots. Parmi les arc-en-ciel, les azurs, les halos, Et sa course, échevesu qui sans fin se dévide A pour point d'appui l'air et pour moteur la vida; Sons le plancher s'étage un clases régulier De ponta flottants que lie un tressblant escalier ; Ce navire est un Louvre errant avec son faste; Uu fil le porte ; il fuit, léger, fier, et si vaste, Si colossal, aza veut du graud abime clair, One is Léviathan, rempant dans l'apre mer, A l'air de sa chaloupe aux téubbres tombée, Et semble, sous le voi d'un asgle, un sourabée Se tordant dans le flot qui l'emporte, taudis Qua l'impaense eiseau plane au fond d'un paradia. Si l'on pouvait rouvrir les yeux que le ver rouge.

Oh! or vaissent, construit par le chiffre et le songe, Éblouireit Shakspeare et revireit Euler l Il voyage, Déles gignatesque de l'air, Et rien pe le resousse et rien ne le refuse; Et l'on entend parlor sa grande voix confuse,

Par momente la tempête accourt, le ciel ptlôt, L'antan, bouleverson les fiots de l'air, emplit L'estace d'une écume affreuse de manya : Mais qu'importe à l'esquif de la mer sans rivages l Sculement, sur son aile il se dresse en marchant ; Il devient formidable à l'abine méchant, Et dompte en frémissant la trombe qui se creuse, On le dimit conduit dans l'horreur ténéberges Par l'âres des Leibuitz, des Fultons, des Képlers ; Et l'en croit veir, parmi le chace plein d'éclaire, De détonations, d'ombre et de jets de soufre, Le sombre emportement d'un monde dans un gouffre.

Qu'importa le moment ! qu'importe la mison ! La brume peut cacher dans la blême horizon. Les Saturnes et les Mercures La bise, conduisant la pluie sux crins épars, Dans les trusges lourds grosslant de toutes parts,

Peut tordre des hydres obscures; Qu'importe ! il va. Tout souffie est bon; simoun, mistral ! La terre a dispara dans le puits sidéral. Il entre au mystère nocturne : Analessos de la crôle et de l'euracan fon. Laissant le globe en les dans l'ombre, on ne sait où, Sous le renversement de l'urne.

Intrépède, il bondit sur les ondes du veut ; Il so rue, sile ouverte et la prose eu avant, Il moute, il moute, il monte eucore, Au delà de la zone où tout a'évanouit, Comme a'il a'en alluit dans la profonde suit A la poumuite de l'aurore l

Calma, il monte cà jamais otage n'est monté; Il plane à la bauteur de la séréaité, Devant la vision des sphères ; Elles sont là, faisant le mystère éclatant, Charuns fen d'un gouffre, et toutes constatant Les énicroes per les insoières.

Andromède étincelle, Orion resplendit ; L'essim prodigions des Pléiales grandit ; Sirius warre son cretère;

Arcturus, oisean d'or, scintille dans son sid : Le Scorpion hidrox fait cabrer an zénith Le poitrail bleu du Sagittaire.

L'aéroscaphe voit, comme en face de lui, Là-baut, Aldéburan par Céphée ébloui, Persés, escarboucle des cimes, Le chariot policire aux flamboyante essivox. Et, plus loin, la lucur lactée, 6 sombres cieux, La fourmilière des abtmes l

Vers l'apparition terrible des sciells, Il monte ; deus l'hurreur des espaces verzoeils, Il s'oriente, ouveant ses voiles ; On croirait, dans l'éther où de lois ou l'entend Que ce vaisseau puissant et superbe, en chantaut, Part your une de ces étoiles!

Tent cette nel, regipant tous les terrestres nouds, Volante, et franchissant le ciel vertigweux, Edve des blêmes Zoronstru Compa effeénée au souffle inscued de la muit, Se jetto, plonge, enfonce et tousbe et roule et fuit Dans le précipios des astres !

Où donc s'arrêtera l'homme séditioux? L'espace volt, d'un mil par moment soncieux, L'empreinte du talon de l'homma dans les unes ; Il tient l'extrémité des choses incoupues ; Il épouse l'abime à son argile uni ; Le voilà maiatenant marcheur de l'infini. Oh s'arrêtem-t-il, le poissant réfractaire l Jusqu'à quelle distance ira-t-il de la terre? Jusqu'à quelle distance ira-t-il du destin? L'apre Fatalité se perd dans le lointain; Toute l'autique bistoire affreuse et déformée Sax Phorison program fait commo uno fotodo Les temps sent venus. L'homme a pris possession De l'air, comme du flot la grébe et l'aleyon. Devant nos rêves fires, devant nos utopies Ayant des yeux croyants at des ailes impies, Devant tous uos efforts pensifs et baletants. L'obscurité sans fond fermait ses deux buttants : Le vrai champ sufin s'offre sux prissautes algèbres ; L'homme vaioqueur, tirant le verrou des técèlees, Délaigne l'Océan, le vieil infini mort La porte noire cède et s'entre-bâille. Il sort !

O reofondeurs 1 faut-il enour l'appeler l'housme?

L'homms est d'abord monté sur la bête de somme : Puis sur le chariot que portent des essieux ; Puis sur la frêle barque au mât ambitieux ; Puis, quand il a fallu vainere l'écneil, la lame L'onde et l'oursgan, l'homme set mouté sor la fiamme ; A présent l'immortel supire à l'éternel ; Il montrit sur la mer, il monte sur la ciel,

L'homme force le sphinx à lui tenir la lampe. Jeuno, il jetta le sac du vicil Adam qui rampe Et part, et risque aux cieux, qu'éclaire son flambeau, Un pas semblable à neux qu'on fait dans le tembeau ; Et peut-être voici qu'enfin la traversée

Effravante, d'un astre à l'autre, est commencée l

Stopeur! se pourmit-il que l'homme a'flançàt? O muit l'se pourmit-il que l'homme, auclem forpst, Que l'esprit homain, vieux peptie. Desfut auge, et, brisant le carean qui le mord, l'éta condain de plain-jed arec les cieux? La mort Va deux devenie inutilé!

Oh! fisuchir l'éther! songe épouvantable et beau! Doubler la promontoire énorme du tronheau! Qui sait? Toute sale est magmanine: L'homme est allé. Peut-être, 5 norreilleux retour! Un Christophe Colomb de l'ombre, quelque jour,

Un Gama du cap de l'aktine,
Un Jason de l'ann, depuis longtemps parti,
De la terre ouiblé, par la ciel caglouit,
Tout à coup, sur l'humaine rive
Reparsitra, mouté sur cet abérico,
Et montrant Nirins, Allieth, Orion,
Tout Jele, din: 2 "Pen arrive !

Ciel I ainsi, comme on voit aux voites des celliers Les noireurs qu'es rédant tracent les chardeliers, On pormult, sous les bleus pilastres, Deviner qu'un enfant de la terre u passé, A ce que le fiambiena de l'homme annui biséle feuné au piafond des astres!

Pas si loin! pas si haat! redecombons. Reatcas L'houme, restons Adaps; mais nou l'housee à tâtons, Mais nou l'Adam tembé! l'out autre rêus alère L'espèce d'idéal qui convient à la terre. Contenton-nous du mot: meilleur! écrit partout. Oul, l'anné s'est levés.

Osit on fat tout h comp.
Comme case d'exploies du failes et de juice,
Quand, apple sir mille san dans la fante vois,
Quand, apple sir mille san dans la fante vois,
Quand, apple sir mille san dans la fante vois.
La pesselvere, like su supel dis genere himmin,
Se brins, extet dealure étuit toures bec chaltes l'
Tout devenée dans lousmen, et les forteuss, les kaincul
Tout devenée dans lousmen, et les forteuss, les kaincul
Liguessance et l'éveneur, la minère et la faile.
Liguessance et l'éveneur, la minère et la faile.
Le measure, le doit, les benneue, les fentateux,
Le measuren, le doit, les benneue, les ténateux,
Le measuren, le doit, de benneue, les ténateux,
Le comme le véterent et du happe dette en ser et.

Et c'est sinsi qua l'ère annoncée est venue, Cette ère qu'à travres les temps, épsiese nue, Thales apercevait an loin devant see your : Et Platon, lorsque, ému, des sphères dans les cieux Il écoutait les chants et contemplait les dances, Les êtres inconnus et bons, les providences Présentes dans l'agur où l'oril na les voit pas, Les anges qui de l'homme observent teue les pas, Leur tâche sainte étant de diriger les âmes, Et d'attieer, avec toutes les beiles flammes La conscience au fond des cervenux ténébreux, Ces amis des vivants, toujours penchés sur eux, Out cessé de frémir, et d'être, en la tourmente Et dans les sombres mûts, la voix qui se lamente. Voici ou'en veit blenir l'idéals Sion. Its n'ent plus l'orl fixé sur l'apparition

Du vainqueur, du soldat, du fauve chasseur d'hommes Les vagues flambolements épars sur les Sodomes, Précurseurs du grand fen dévoeunt, les lucurs Que jette la sourcil tracique des tuern Les guerres, s'arrachant avec leur griffe immonde Les frontières, baillou differme du vieux mende, Les battements de cour des mères aux abois L'embascade ou le voi guettant au fond des bois, Le cri de la cheuette et de la sentinelle. Les fléaux, ne sent plus leur alarme éternelle. Le deuil n'est plus mélé dans tout ce qu'on enteud; Leur oreille s'est plus tendue à chaque instant Vers le rémissement indirné de la tembe : La moisson rit aux champs où râtait l'hécatembe ; L'agur ne les voit plus pleurer les nouveau-nés, Dans tons les innocents presentir des dannés, Et la pitté n'est plus leur unique attitude ; lia ne regardent plus la morne servitude Trosser sa maille obsenre à l'osser des beroesux. L'homme aux fers, pénétré du frisson des rosenux, Est remplacé par l'homme attendri, fort et culme ; La fonction du socotre est faits per la palme : Voici qu'entin, à gloire l'examés dans leur veru, Cos êtres, dieux pour nous, créstures pour Dieu, Nost henroux, l'houme est bon, et sont fiers, l'homme est Imute :

Les ospits pure, estain de l'estagrife suguete, Devant or globo obscur qui divinital bunincex, No sentete plus asignet l'amoot qu'ils ent en eux; Une clarté prant dans leur beur regard somber; Et l'archange commence à sourire dans l'ombre.

A Terrarie dicti as proj. A is verse,
A la science quin vest bides,
A la science quin vest bides,
A la science quin vest bides,
A l'absonablea; an soline, as ries, a Phomas-heurenes;
Il ve, or principate sarvier,
As chock, à la relevante sarvier,
As chock, à la relevante sarvier
A si nelippione es statute viriet
A l'annous, que l'on comus serment on desta lieu,
A l'annous, que l'on ciencus serment on desta lieu,
Qu'in cele il monte son cicheli I
Il print Romanus l'al lounce de regiri d'altoprit.

Tout l'affreux passé qui s'effare, Il aboitt la loi de fer, la bei de sang. Les glaives, les caccans, f'enchraçor, en passant Dans les cieux comme une famfare. Il cembre an vrai ceux que le fanx repoussa : If fait briller la foi dans l'esi de Spinosa :

Et l'espoir sur le front de Hobbe; Il plane, rassurant, réchantfant, épanchant Sur en qui fut lugulèse et en qui tut méchant Toute la ciémence de l'aube. Les rieux shannes de hataille étalent lé dans la puir :

Il passe, et maintenant voilà le jour qui luit Sur ces grands charniers de l'histoire Oh les siècles, predont leur ceil triate et profond, Venalent reporder l'ombre afroyabla que font Les deux niles de la victoire. Derrière Iai, César redevient homine; Éden Nébrajis sur l'Érèbe, épassoni socialit; Lies noces de lys sont convertes; Tost revient, tont renuit; ce que la mort courbait Belleurit dans la vie, at le bois du gilet Jette, sifrayé, des branches veries.

Le unage, l'aurore aux candides fracheurs, L'aile de la colombe, et toutes les blancheurs, Composent lle-haut va magie; l'errière lui, pendant qu'll fuit vees la clarté, Dans l'antique noirours de la Patalité

Dus lusurs da l'enfer reugie,

Duts ce brumeux chico qui fut le mende ancien.

Oh l'Allah ture a scoude au sphinx égypélen,

Duns la séculaire gélerane,

Dans la Gemorrhe intâree où flambe nu lac funcest, Dans la fecèt du mul qu'écharrent vaguement Les deux yeux fixes de la Haine,

Tombent, sèchent, sinsi que des fesillaçen morts, Et s'en vont la deuleur, le péché, la remords, La peversité limentable, Tont l'ancien jong, de rêve et de crime forgé, Nemrod, Aavon, la guerre avec le péljugé, La bemberie avec l'étable!

Tons les apoliatours et tons les corrupteurs N'en vont; et les fanz jones sur les fansees hauteurs; Et le tauvess d'airnis qui bengle, La huebe, le billot, le bicher dévorant, Et le docteur versant Ferreur à l'anormat.

Vil băton qui trompart l'avecçie f Et tons ceux qui faisaient, au lieu de repentirs,

Un rire au prince avec les larmes des martyrs, Et tous ces fintteues des épécs Qui lousient le sultan, le maître universel, Et, pour assais-auer l'hymne, permient du sel Dans le sue aux tâtre compés ?

Les pestes, les forfaits, les cimiers fulgacents, S'efficient, et la route ob marchièren les tymns, Bitait nei, Degra infanistre, Ex l'épine, et la hana borrible du chemiu Où l'homme, du vieux moude et du vieux vice humain, Exteud blère le bouc sénistre.

On volt l'uire partout les esprits aidéraux ; On voit la fin du monstre et la fin du héros, Et de l'adhée et de l'augure, La fin du conquiénat, la fin du paria ; Et l'en voit l'entement sortir Beccaria. De D'racco qui se innasfigure.

On veit Legueau sortir du dragen fabuleux, La vierge du Toquebbee, et Marie aux yeux blous De la Véuns prostituée; Le blasphème deriest be paume ardeut et pur, L'hymne preud, pour a'en faire autant d'ailes d'arur, Tous les balllons de la Inde.

Tout est seuvé l'in fieur, le printemps aronal, L'éclosion du bien, l'écronlement du mai, Fétent dans sa course enchantée Ce benn globe éclaireur, ce grand char curieux, Qu'Empédoch, du fond des goaffres, suit des yeux, Et, du haut des monts, Prométhée!

Le jour s'est fait dans l'antre où l'horreur s'acquaqut. En expirant, l'antiqua univers décrépit, Larve à la prunelle ternic, Gisant, et regardant le ciel uoir aétoièr,

Gisant, et regardant le ciel noir a'étoiler, A lassé cette spôire heureuse a'eavoler Des làvres de son agonie.

Oh! ce navire fait le voyage meré! C'est l'ascension bleus à son premier degré; Hors de l'antique et vil décombre, Hors de la pesanteur, e'est l'avenir fondé; C'est le destia de l'homme à la fia évalé, Qui lere l'ascer at sort de l'ombre!

Ce navire là-haut conclut le grand hymen. Il méle presque à Dien l'Ame du geare humain. Il vois l'anate dan du proprès vers le ciel ; Il est la vante dan du proprès vers le ciel ; Il est l'entre-altière et sainte du réel Paus l'antique idéd farouchs.

Oh! chacan de ses pas conquiert l'illimaté! B cut la joir ; il est la paix ; l'humanité A trouvé son organe émmenne ; Il vogue, usurpeteur sacré, valuqueur béal, Romaiant chaque jour plus lein dans l'infini Le pout sombre de l'isonne continence,

Il inhoure l'ablace; il ouvre ces sillous On croissairent l'euragan, l'hiver, les tourbillous, Les sifficments et les huées; Grâce à lui, la conocode est la gerbe des cieux; Il va, féonslateur du ciel mystérieux, Clarres navented des nuées.

Il fait germer la vie hamaine dans ces clumps Où Dieu n'avait eucor neusé que des couchants Et nouvenné que des autreres; Il entend, sons son vol qui fend les airs servins, Croten et fefair partout les peuples auvernins,

Ces Immenava épis souores!

Nef magique et supoème! elle a, rien qu'en marchant,
Changé le cri terrestre en pur et joyeux chant,
Ibajeuni les racca flétrics,
Établi Fedre vrai, assurté le chrenda sur,

Dieu Juste I et fait entrer dans l'homme tout d'azur Qu'elle a supprimé les patries ! Fassant à l'homme avec le ciel une cité, Une penaée avec toute l'immensité,

Elle abolit les vieilles règles, Elle aboisse les monts, elle annule les tours ; Splendèle, elle introduit les pruples, marcheurs lour-da, Dans la communion des aurèles.

Elle a cette divine et chaste fonction De composer là-bant l'unique nation, A la fois devalère et première. De promoner Pesor dans le rayonnement, Et de faire planer, ivre da firmament, La laberté dans la laugère.



A GLINISE OF THE PUTUR.

The Pitture—the last evenings, which has included all others. In substitute the store of liminarity, has then were 18° Copie with the stars polarities; proved with the process and fand and course, and for allow evening the state there of the Bernal! Its lixing and pathonly, the nibble arts, the larner work and suffring, and then however there of all the visitate of the near of such is clockward, the anches what and covers, and deep-stand, interirable, but nost speaking voices of destiny and history, supernal ever us of sell between the contract of the series of such as the superirable covers of the series of such as the superirable covers of the series of such as the superirable covers of the such such as the superirable covers of the s

Stars silent rest o'er us, Graves under us silent. Case-tee.

Some imagine that they can perceive the foretelling of the great change which may be caused by the science of Aerostation in the inspired words of the Holy Scriptures, and that it is foreshadowed in the vision of Ezekich or in the sublime strains of Isaiah:—

" Wiso are there that fly as a cloud, and as doves to their windows?"-lx, 8.

A recent writer has directed public attention to the resemblance between the description of the Leviathan in the Book of Job, and the iron-plated vessels of war now constructed by

3 N 2

so many nations. We should remember, however, that the Holy Bible was not intended for the instruction of man in the various sciences; but that these subjects were wisely given him for the exercise of his intellectual faculties, and the use of that reason with which it has pleased the Almighty to endow the neblect work of this Creation.

The Bible, we know, was the gift of God, in His unspeakable love and mercy, to the unbarrned as well as to the learned, in order to reveal to man the plan of redemption, and that which can alone give peace and contentment in his last hours,—the blessed assurance of everlasting life, through the merits and mediation of his Saviour.

> Now safely moored, my perils o'er, I'll sing, first in night's diadem, For ever, and for evermore, The Star! the Star of Bethlehem!



ANORE AND CHEEK

Down thither prote in flight, He speeds, and through the vast ethereal sky Sails between world and world with steady wing Now on the polar winds, then with quick fan Winnows the buson air.

MILTOK,

# APPENDIX.

THE PASSIVE AIR UPSORE
THERE THRAD: AR WINNS THE FOTAL RING
OF REIGH, IN GORDET AREAS OR WINN,
CAME REPROSORD OTHE RESE TO RECEIVE
THERE RIMES OF THESE TO ONE MAXY A TRACT
OF HEAVES THEY HARRIERS, AND MANY A PROVINCE WINK,
TRISHOLD THE LANGHOUT OF THE TREENES.

MILTON.

## APPENDIX.

.

Tax following rell of all known Aremants was compiled by Depuis Delocart, in 1820, angenerated by Much.
Mason, in 1858, and revised by Depuis Delocart in its 'Mound d'Accordation', in 1810. These not added
to it, as since that year the numbers have increased by thousands, but I think the numes of the first five
lambered experimenters who accounted in such finglic best, as a balloon will prove interesting which
selected while the action of the development. The percentage of accidents, and the characters of the mationforming our present Commonwealth, as shown by the following figures, are not whiten interest.

The number given by Monck Mason is 471, and the proportions among the different nations is as follows:—

English 313	French 104	Italians 18
Germans 17	Turks, 5	Prussians 3
N. Americans 3	Russians 2	Poles 2
Damentine 0	Done 1	Series 1

Among these are to be found the sames of th biline—of whom 2s are English, 17 Freeds, 3 Germanand 1 Italian. Out of several thousand accents (Green adone mode 269, and other mowhere of his family 523), only nine lives have been lost, and these cannathes were owing to the following canser:— Free tot, 3M, Fillian de Islands and Collection (Islands and Zandescent), to the labowed period for Hornester, ees, Machanel Manchand, to the firewards also was exhibiting; the other three-Po. Harrisroughbors of the search?

M. Depuis Delcourt gives 504 noromants down to the year 1848, with ten casualties; as, to the list just given, is added the name of Mr. Cocking. They are marked \* in the following list:—

#### ROLL OF THE FIRST 500 AERONAUTS, WITH THE DATE AND PLACE OF THEIR FIRST ASCENTS.

#### 1781.

ARLANDER (Marquis d'), Major in the Garde Royale. La Muette, near Paris. Characte, Professor of Natural Philosophy. Paris. Rouser, mechanic-engineer. Paris. Printime te Bourse, Professor of Natural Philosophy. Paris.

Witexx (James), corporter. Philadelphia. First second in America.

Assocs, opticion. Strasbourg.

Associant Covalier Paolo. Milan, 25th February. First accord in Role.

Bazrado (Ginesppe: Milas. Bazrado (Able), Prefessor of Natural Philosophy. Dijon. Bazratazo (L.), mechanic. Paris. Miele 66 ascenta. Boxy, Registrae to the Provincial Parliament. Bosen Boxton, painter. Amujuez, Papin. Bajáston, tercelant. Marwelles. Bars. Chambery. Carris (Abbel), Professor of Philosophy. Rhodez. Cuarross, architects. Bordessas. Cuarross, 12ba del, afterwards Dube of Orienna. Skint Cloud Cotax-Hruss. Paris. Cotax-Hruss. Paris.

COULD'S AND MANY, Livetenant-General, Nation, Daylerman, Conte de, Officer of the Guarde, Lyon, Danterman, Frederico of Natural Philosophy, Berdenix, Dezervine, merchant, Noates, Brisnavine, Bordenix, Lyon, Erraary, Shippianter, Lyons,

FAFFART, skip-jainler, Lyuns,
FOFFARTS (C. J., merblant, Lyon,
GABREL, Strukoury,
GREM (Amptis), architect, Milan,
GREM (Charles Joseph), architect, Milan,
HARMING (Heerge), Vientu,
JETTERM (J. J., n American doctor, London,
JETTERM (J. J., n American doctor, London,
London,
JETTERM (J. J., n American doctor,
JETTERM (J. J., n American doct

JETTERES (J.), an American doctor. London. LAPORTE D'ANGEPORT (Conte.; Lieutenant Colonei of Artillery Lyons. LATRESCEN Comto de), a Corresponding Member of the Academy LOUGHET, Professor "de belles-lettres," Rhodez. Laux Prince Charles de). Lyone. Lexano (V.), Attaché to the Nespolitan Embassy, Moorfields, London. Eith September. First arent in England. Marran (Chevalier), in the French Navy. Chambery. HARRY, Marseilles, MONTGOLFERN (Joseph), one of the inventors of the necestari. Lyona. Moremer, Professor of Natural Sciences. Names.

Pressure. Streeburg. Procur. Professor of Chemistry. Vermilles. HAMBANT. Air. RAPHICE. Brentierd RIVIERRE, Near Paris

Bostar, mechanical engineer. Paris Bowt (Gaetone). Milan. ROTHERAT. NAVAS. SABLER (James). Oxford, 12th October. The first Fuglish acrossul SCHRANT (Michel), Victoria.

SHEEPON, Professor of Austomy; 16th October. Chelien. STUVEN (Gespard). Vocans.
Turnes (Mohano). Lyono, The first Lady in a free arent. TYPLER (James), August 27th. Elioburgh. The first in Great Britain.

YHLY (do), President of Exchequer Committee. Dejon. \*Zamprecant (Count F.). London.

1785, ALEAN, chemist. Varelle, near Paris.

Assoca, London. Balewin, doctor. Chester. Become Lordon Born. Halifax. BLARE (Copinie), Lordon,

CHAPPE Abbe), Javelle, Caossus. Dublin. First ascent in Ireland. Cracross Marquis de). Javolle. DAVY. Beceles. DECREE, Norwich, Drivers (jun.), Bristol. D'Hormservit, The Hagu

FITZPATRICK (Colonel). Oxford. France (Lieutenant). Chester. Froemers, Halifex. Harren, Birmingham, Hyera (Miss). Beerles, L'Egrann (Chevalier de). Lille. Locumon Lordon. Levanenz (Madame de). Javelle. MAGUER (Sir Richard). Dublin. Knighted for this exploit. Money (Major, afterwards General). London.

NARROSSEE (Courte de). Juvelle. NEWBARCH, Halifax. Poug. Burr-St. Edmund Porane (Dr.), surgeon, B.N. Dublin. Permorn (Baron do). Javello. \*ROHADIE. Boulogue. Routs (Dr.), Becries.

SABLES (John). Worrester Sant (Mrs.). London. The flest English Lady, 29th Juny, 1782. Smooter (Madlie.). London (3rd of May), aged 114. This French ledy year the first ledy to occur in Great Britain. SURGERT (Mdlle.), 21st May. London.

Turence, carpenter. Javelle, near Paris VALLEY, manufacturer of chemicals, Javelle.

Vrzenow (Admiral Sir Edward). London. Wrvzenam (Right Hon. W.). Moulesy-Hurst, Surrey The first

M.P. to second.

BEDGER. London. SAINTE-CROIX. Salisbury. TESTY-BERRY. Paris.

1788. Tranzamars Mademoiselfe de). Meta.

1790 GANNERS (André-Jacques). Paris. He mode 50 ascents and year the first personnel who descended in a parachate in 1797.

Innate, Turkish Pachs. Warsey, 14th May. LAZARMAND DE SADSTE-CODE (MARQUIS), Paris Powsky (Conte J.). Warnaw, Hith May. STEENERG (Conte de Joachim), President of the Academy. Pregue.

1786.

1792 BLANCHARD (the younger): Lubeck CHART (Comtesse de). Luberk.

Brarvan, Aido-do-comp. Paris. GARYERS Madame , Paris. HENER (Madile Célestine). Paris-Pron, ehemist, Bonen.

1799. De Lazavne (Jeebme', netronomer. Paris Manuer (Madlie.). Paris.

Danag | MadBe, Panchette: Paris 1801. Bicuxt. Rennes.

Because De CHAPPLEEN. Rennes. Nouses, exchangee. Paris, BOLLAND. Paris. Resonan (Claude), builder. Paris. VAREE, Rennes.

Acaup, builder. Paris. Bass.v. Constantincple. Basws. London. DEVENE. Constantinople.

Loxun Edward Hawke), London \*OLIVARI. Orlivana. SHOWDEN (Captain). London. 1803.

Annedone (Pascal), doctor. Bologea. Avanter, Moscow, Garatters Herry, Berlin, Gosey. Valernes. GRAHESTI, doctor. Bologue. L'Honer, merchent, Hamburg Lewory, Russian General. St. Petersburg.

\*MOSERRY. Rosen.

BORRESON (E. G. R ). Hamburch. TRATTER (Louisenant-Colonel). Carlsrobe.

ALEXANDEZ Mons. St. Petersburg Burr (J. B.), Professor of Natural Philosophy and Astronomy at the "Gollege de France." Paris.

APPENDIX. ROLL OF THE FIRST 500 AERONAUTS. 45	
*Brancham (Madame), Maneilles,	1817.
Bosza Aimé. Paris.	GOSDANIK merclant. Lyona.
GAT-Lessac, Professor of Chemistry at the "College de France."	MARGAT, Paris.
Paris First ascent for meteorological experiments.	PURLEM-MUSICAY (The Prince Herman). Berlin.
Giam, Lyena Mictarx, Vicana.	
PALLE, ex-officer of the Swiss Artillery. Paris.	1818.
Torcummory (Madame), Monore.	Besoure Maille, Cécile). Paris,
Zacchanor. St. Petersburg.	Beavens, N. (Modile.). Paris.
and the state of t	Genau Charles). Bordeaux.
1895.	Hantay Madana Paris
	Mantar Madane) Paris. Naver (Madile.). Bordouge.
Attitute (A. Debourg). Rosen.	
Juniors (W.), Professor of Natural Philosophy at the College	1819.
Prederick William, Berlin, LEMMCHR, H., manufacturer of obermionle, Paris.	Rosenway (Engine), Lisbon.
CERTICIES (11.) INCOMMORBOURY OF ODSESSORS. PAPER	towaring (Sugare), Liston.
	1821.
1806.	
Kozza, atudent. Berlin.	Fassy (A.', agent. Mancellon.
1807.	GREEN Charles). London. Has made 526 accous without any
*Brrroure (Herr, mechanic. Manulcim.	serious accident) ' and use the first to use cost yes.'
- The Lower Court V Broccounter Temperature	
1808.	1822.
	Garryrus. Chelienhaus.
Buoscut (Signer). Paden.	JULIAN (Maille, Thereas-Aglas). Maracilles.
Danzx Jacob), clock-maker. Vienna.	
KUPARENTO Jordarki), Warnew (24th July). This Pole's balloon cought fire, but he descended infoly in a Parachute.	1823.
eneght and, but he descended mitrly in a Physicistic.	Consex (Madame Virginie). Seville.
1809.	Granam, London,
Dorsens (Baren),	*Hanny Lieutenant, R.N.) London,
Herenganor Miss.	Bonnerson (Auguste-Denitri). Scrille.
MARCHESTELL (Autonio). Formen.	Specific (H.). Besiling.
	Spanner, Oxford.
1810.	Wens, Bath.
CLAYFUEZD. Bristol.	
CLAUDETS 'Heer , manufacturer of glazed cloth. Berlin.	1824.
Pauer Lieutenat London	Arams (J.) Bath.
Resonant Charles-Godfrey). Berlin.	BEAUPOY (Coptain). Islington.
	Bran. Cantebury.
1811.	BRADLEY (Mose). Warwick.
BEAUTOT .H.). London,	BROOMER. Coventry. CLARKE. Welverbampton.
BURGAN (J.). Birmingham,	CULIA M (R.). Exeter.
Cozzeso (Herr'. Copenhagen.	Dormay (J.). Bolton,
REICHARD Madile Wilhelmine Berlin,	Dereu-Dincorne, Editor of a Parisian Paper. Montjonn. The
Bournton Madame), Victoria,	founder of the Aerostotic and Metopological Society of France.
SHATHTRINI (Philippo). Florence.	He died in April, 1864, and Nadar rives a touching "Option
	Functors" in the Preface to the "Memoires do Great"
1812.	GANDY (Lieutement) Portsen.
BOXAGA (Figure), Belogna,	GRARIAN Mrs.). London.
Kuaskewit. 'Herr', doctor, Vienna.	Gamu The Rev. G.). Belfast.
Messen, Vienna,	General. London. Hanno. Worrester.
1813.	Richand J. M. Montjonn.
CAMERON, Glosgow.	Bustres, London.
	Sat Nicons (B.), Bristol.
1814.	Stra. Bruchica.
*Santen Windham London.	St. Atsix. London.
THORPSON Miss. London.	Stocke (Miss), London.
1815.	
	1825.
Gammun (Madlie, Elisa). Paris.	Bretter (Miss). London.
	BLOWERS Miss; Preston.
1816,	Care (Captain , London, Constitute M. Pierre', Sevennaka,
Gancener / Empfaie'. Paris.	Cream Cantala Landon
Levro-rox, Doblin.	Cruste Captain). London, Dawnon Mine., Kendal,
Microscay or Bratzer (Madile, Line). Paris.	DEAN, London, Kendal,
	3 0

GREEN (George). London.
GREEN (William). Newworks upon-Type.
GREEN (William). Newworks upon-Type.
GREEN (William). Movemble.
JULIAMS. Revision.
JULIAMS. Revision.
PENNY. London.
RANKAY. Carliele,
RANKAY. Carliele,
RANKAY. Carliele,
RANKAY. Supran.

1826.

Banass. Louden.
Banone. Banton.
CAN (W.). Lendon.
CAN (W.). Lendon.
CANN. Lendon.
GERN (George, jun.). Lendon.
GERN (GEORGE, Jun.).
SAVENIA. Notificphon.
SAVENIA. Notificphon.
SAVENIA. Notificphon.
SYNCHAM. State of Sandards.
SYNCHAM. State of Sandards.
SYNCHAM. See J. J. Hanley.

WEDGEWOOD, Newcostle, WEITTAKER, Lorden, 1827. Actiky W., Ashton-under-Lyne,

Bacamorse. Ashton-under-Lyne. Buser, Lenden, Bnown, Wakefield, Baown S. Pontefreet. DAVERS (R .. Hull. Davins Mrs.; London, Enwants Miss E. P.;, London, Fox (G.). London. Gaz. Stockport. Gowann. Ipswich. Gowant Jun. | Ipowich. GRAPTON, Macricofield, GEERY (Thomas), Manefield, GREEN James London. Hua. Hull. Hodgern, Donesser, Jarrents, Etrainglam. KENNEY. Gain-brough. Lzzon. Warrington. Marriew (Coptain B.N.). Hereford. OLIVIER (Madame). New Orleans. PRILLIPS (H. L.). Manchester. Surru (W.). Biemingham. STRAFFS (T. W.). Manchester. WILLIAMS W. H.). London.

1828.

HALLY, Orentry,
DAYE, SCHEIMPROCESSER,
BERE, CARRESBURY,
BORNERS, COPENSY,
CRAINS, CARRESBURY,
GRAINSTER MY, HL-, Lewis,
GLOSOF, W., Shellish,
GRINS MR. HERRY, Robestor,
HERRICK, Lewiss,
Modelle, M. (1998),
LOVER, Berfele,
LAPETE Colone I. Maidstein,
MARCHES, Salfred,

ORANY (Sgree). Bologue. PARLINSON. BANG. PERRINGON. BOVER. PERRINGON. Chlebaster. PURELERYON. Chlebaster. POREL. Product. BORRINGON (Mrs.). Cantroluzy. BORRINGON (Mrs.). Delvin. BORRINGON (Mrs.). Delvin. Will. Birkhorn. Voirer (Herr.). Holdenfield. Will. Zurron. Boston. Woon. Walefield.

1829. Bancock Mrs.). Lendon.

Batrees Mrs. Leedon.
Batrees Mrs. Leedon.
Batrees Leedony.
Darriers. Combury.
Darriers. Combury.
Darriers. Combury.
Darriers. Combury.
Garriers of Leedon.
Garriers of Leedon.
Garriers of Leedon.
Mannata. Derby.
Marins. Cambridge.
Bosser Millio Landwritte.
Dran.
Sever G. W. Cambridge.
Warners (F. T., Leedon.
Warners (F. T., Leedon.
Warners (F. T., Leedon.

Actum. Cambridge.

Buowse, Manchester,

1830,

Base. Leith.
Bast NOV [F. W.]. Combridge.
Bussiere. Leida.
CHTHAL-J. Bh.). Lincoln.
DOCKINGO. Notified.
HOLLOW [Robert, afterwards M.P.). Combridge. Went to Numera
to 1810.

HURIN Cambridge, Bourn Kilmanuck, Thioseon (Adolphus), Havana.

1831.

CALASTER (Major), Allon CARSTERN (Nervich), Fourren Dr., Chelmaford, KENDET (Mas E.), Chelmaford, KENDET (Mas E.), Chelmaford, Manderala, Noverich, Manderala, Noverich, Manderala, Noverich, CHECK, Company, Novembe, Person, Lancoln, REDD, Perth, TUREN (F.), Cambridge, Woosmook (P.) P., J. T., Combridge,

1925

Americeo. Louden.
Blay. Coyentry.
Foluciors. Lourender.
Gyron. Louden.
Hudwan. Louden.
Hudwan. Larender.
Hore. Cambridge.
Larender.
Lazen. Dr. Mentmarire, Paris.
Lazen.

LEXXOX (Conto de), formerly "chef d'esculron," Montmartre. Lexxon (Madame). Montmarire. Many. Louden. PAUMER. Whitehaven. SLEA. Pecrith. TAYLOR, Manchester. TRAVIS. Menchester. 1833. Annan (Francisque), builder. Lyons. Manuall. Worksp. Warroopp (J. H.). London. 1834. ELLIOT. New Orleans. Vissorn. Senderland. 1835. Встав, вигрена. Lendon. CLATON. New Orleans. CRAWSHAY (Jun.). Bury St. Edmunds. DISSET-STYART LORD, LONDON. GOCKER, Bury St. Edmunds. HARMAN, Unbridge. Houger, Lynchburg, America. 1836. Back, London. Banctay, London. But vowers (Duke of). Lendon. BURNETT, London. Crane Mrs.). Lordon CLANSSCARS Marquis of London CLASSIE London \*Course. London. COLLEY. London. Cox. Lenden. DELATERAD. Lenden Evans (Mrs.). London. Forre. Cheltralum. Genry : Mrs. Charles . London Gurror Miss Marian'. London. Gurrow Captain, Paris. Gyr E. Lenden. Gyg (Jun.). London. HARRISON Miss', London. Heren (G.). Glomester, House Louise. Housew Richard Loudon. Hrunes R., London, Hrunes T.), London, Hrunes (W., Paris, Kryy (Dr., London, Moves Mason. London. Went to Names. Onta Captain'. London. PATRICK. Lendon. PRINCE. Paris. Pros W. Gloucester. BOSCOE (Mrs.), Paris. Bran. London. STENTER, London. STIERT (Jun.). Gloucester, STREE (Thomas). Warwick. Talgor The Hon, W. London. TALROT (Baroness). London. WARRYRYON (E.,. Chellenhaus. WEITE (Ceptain). London.

Wisz. Lancaster. America. Woodstorry, London,

Warter (2) Character WHOTTEREN (J.). London YARROUTS (Lord). Paris. Yorni, Lenku. 1837. Arans W. H.). London. Avans Mrs. W. H.). London. Acam Jun.; London, Attant (Captain), Louden Ramus R. R.). London. Beamer S. London. Box. Lendon. PLANSELT (Captain). London. BULLIA LODGE. Beccusar Miss Arms. Marchister Burreson. Cheltenhun. Bronz (Johnsie). London Bruza Lord Walter, London. CAMPBEL Looks. Carenuz Captain'. London. Catrevres. Matelester. CARTEST Covere for West Kent'. Lendon. CHADWICK. Manchester. Court, Louise. Corszxo (Caption) Curson 'Livetenant-Orlead Sir M.'. Manchester. Charge stay (J. L.). London. Coverent. London. Davipeon, London. Dray Miss. London. Frace Looks. GARRIE. London. GARRIET, Cheltrobana Genera (Edward). Paris Gages, seetheesee. London. Gaggy, Manchester, GREGIST. Oxford GTE Sen.: Leplen. Horrox (Ceptain Wilmot). Lendon. Brus. London. Lamerr. Louden. LINCESTER Coptain). London. Levix Louisa. JEARNAG, Chritenham, Japanes, Lenden. Junes. Peris. Larve, London. Logo, Meachester, Materra (Beste). Lendon. Maxorman, Manchester, Marz. Lonica. Monno W . Lenden. Mose J.). Cheltenhau, Membays W. Turencliffe, Lords. Prat (Signor). Paris. PORREL Captain', London. Powers (T., M.P. London, Brings J. Lodes Bougus, Levels. Born. London. SOUTH PR LA SALLE, Paris. Street. London. Steam. Manchester, The only Englishmen except Teller that over made use of a Montgolfière, SNEATH. Manufield. STENET. Christohau. Tatton Looks. Tromas Leoks.

3 0 2

Tourner Copieie). London.

TRACEY (H.) London. VEYSTY, Marchester. Bantow (Arthur Pratt). London, WARNER, London. Beckmany, gymnest. Bordenux. WATEGE, London. Bucnorrentin, Brussela, WATES. London. Bulanti (Madlie, Clémence). Berdeaux. WESS, London. Bynyn, Peckham. Zicur (Ounte de). Paris. Cocumus. Alx-la-Chapelle. GALE, London. 1838 GODARD (Engine). Lille. Texture, London. Gorneron, Peckhago Grock (B. C.). Aix-in-Chapelle 1839. HOUR. London. Ecuzior, pleneferte-manufacturer. Paris JENNY (V.). Bordonux HAMPTON John: Lowlon, Jornzan, undertaker. Paris, LARTET. Agen, Prance, Kuxio (The evlebated Herr), Leudon, Lazar. St. Petersburg. MAJORET. Bordonex. 1841. Mared Moderne, Bordeaux, COHARTEL Lyons. Mayon, Berleaux. Davinsov. Lendon. DUDLEY-WARD (Captain). London. ROSET, Barded, SCHENERE Misdates A.). Paris. Serre (Albert), London, Sorma (Madile, B.). Paris. KERNCH. Bowlevick. SPURITER (Coptain, R.N.). Bruxelles Schwarff, musicism. Lyons. Strovers (Adolphe de). Alx-la-Chapelle. VAN ELEWYCH. Brussels, 1843 VAN HEERE (Dr.). Brussels Grains (J.). Nontes VIDAL (Modille, Erama), Bordonux LARTET : Madame). Auch Vgane x (Commandant des Cuirassiers). Mans 1818 BEATVOR (le Viwente de). Paria. Becorni (Armand). Paris. Coxwill (Henry). London. Has made 520 ascents down to the Borquié (Ferdinand). Pari year 1894. BROUNCE, Madame de .. Depas (Madlle, Augustine). Paris Canton, hetel-keeper, Brussels GUILOT Boscuond). Cambray. DULBULSTER, merchant, Brussels. Manuar Madamel, Murwillon, Evans Medile), Paris, Pron J. Reynolds; Stepney. Fraci. Paris. HARRIPOTOR, Paris 1845. Jones (Augustus). Brussels. LAVALETTE De). Paris. Barroup Tuke of), London. Manta De Lancy (Madame). Paris. BARRIER Medile. Little. RASSLOT W. de , Captain in the Danish Artillery. Liege, MATTIUM F., clown at Drury-lane). London, Stocks, English enganeer. Liego. VANSTTTANT, Chelson. TALBUT-BAGOT (George). Paris. TRAMENTER a Professor at the University of Liege. Liege. VAN DER DOS, Dutch student. Liego. D'Ontson Baron), Swelish Ambanudor. Berlin. WHARDSOTON, Brussels. YAYES, Liega. Lorer Des Marriel). London.

The names of a party that mode an interesting sevent in 1794, are omitted in this list, as the only record we now possess does not give them. It consisted of a Fernian physician and two Bostangia of the Semplic of Constantinephe. They ascereded from a court of the planes, in the presence of the Statla and removed these and tail-direct the European from the Asiatic continuest, and, after a verage of four and all hauns, descended at the castle of Herus, ninety miles from the cast, where the Pachs extentioned they were review with all the bosoner which as onliniting hopitally. Type their returns to Constantinephe they were review with all the bosoner which as onliniting anaposted in the Wayne of St. Sephia, where it remains to this oldy (1830). This is the only instance, as vie, in which the passage from one quarter of the pilots to another is taken effective.



MARQUIS D'ARLANDE .



LOUIS PHILIPPE DUC DE CHARTRES .



M. GARNERIN.



JOHN JEFFRIES . M.D.



JEAN PIERRE BLANCHARD.



M .. CHARLES .



JOHN HAMPTON .



ROBERT COCKING .

Partie processinghood at the Minister Survey Willer Santhampton make the improvementation of layer Billiaham have RL bet Sur Hammer RL EK'S So Wiles law.

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TIBERIUS CAVALLO, F.R.S.



M" SAGE .



CHARLES GREEN .



EDWARD SPENCER .

Their successful as the Ordinance Survey Of the Southampton under the supernamehous of Copt Wilsham hour R.E. Cal Sir H. hance R.E. F.E.S. Six Director



MA SADLER .





JAMES GLAISHER, ESQ. F.R.S.



HENRY COXWELL , ESQ .



#### BOOKS\* HITHERTO PUBLISHED ON AEROSTATION.

The ark which mind has for its refuse wrought

Its floating archive down the floods of time.

SCHILLER on the Art of Printing.

"Rooks are faitfull repositories, which may be a while neglected or fragation; but when they are speened again, will again inspart their instruction. Memory once interrupted, is not to be recalled; written bearing is a fixed luminary, which, after the cloud that has hidden it has passed away, is again bright in its proper station. Tradition is but a mestor, which, if it once falls, cannot be rekinded: "—lensaryor.

1627 HERR PLAYDORS, 'De Arte Volandi,' Tubingre. 12mo.

1648 John Wilkins (Lord Blabop of Chaster), 'Dedalus, or Mechanical Motions.' London. 8vo. Also 'Discovery of a New World,' and other books.

1663 Woncesten, the Manquis or, 'Century of Inventions.' London. 24con.

1670 Francis Lana (Jesuit), \* Prodromo, o seggio di alcone invenzioni nuova premesso all' arte massire.\* Breacis,

1755 Gallen (le père d'Avignon), 'L'Art de Naviguer dans les airs, ammement physique et géométrique.'
1775 J. Parestlev, 'Experiments and Observatione on différent kinds of Air.' London. 3 vois. 8vo. Translated into French by

Gibelin. Paris, 1779.

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1363 Leury-Cite, Joer to Sarre-Vasans, I Lettri à Molante la Princisses de . . . à Peterboury-mer les Blums. Ostend. Brow-\*1768 Merceura (antianda due raule et General), Lieur no penuler au Corp. Reyel da Génei et de l'Anchenia Reyel de Sériones. Al Mémoire sur l'égalithes des Machines sérestatique, sur les différeux morrenal et faire montre et devendre, et spécialment un coloi d'exécuter com montrerves, aons jete de leur, et auss receles deire infammable, no mémoganet dans le lation non

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\*1784 GERADO (L. J.) \* Essai sur l'Art de Vol Aérien. \* Paris. \*1784 M. Dr. Morroccriza, \* Sar l'Aérostate, prononcé dans une Séazos de l'Académic des Sciences, Belles-Lettres et Arts de la Ville de Lyens en Normenthe, 1783, Paris.

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\*The paper on the positiont of influenceable six that serve to interest this country mone, is that which doctribles are bandled of transferred in them priced. The doctrible showing with two layers are masses to the method of transferred in the priced priced priced in the priced priced

" M. Morresa, of Dijon, has probaced inflammable air from potators by mere distillation. He hopes soon to improve his method; and we shall probably hear more of it in the next volume of this collection."

<sup>\*</sup> The books marked \* are at the service of the public in the libeary of the Patent Office, Sorthwespton Buildings, E.C.

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  - b. 282. 1816 EDGEWORTH (RICHARD LOVELL), 'On Aerostation,' Phil. Mag., vol. xlvii, 185,
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- 1851 JULIES TUBBLAN, 'Histoires de la Locomotion Aérienne depuis son origine jusqu'à nos jours.' \*1851 John LUNTLY, 'Air Navigation' (rotary). London,
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- † The cest of making this collection exceeded 2004. It was twice | distressed circumstances. To his industry the author owes the solid by arction, and longist the second time for the library of the greater part of his own collection, as they were the duplicates that Peakest Ubles for 2-2. The collector is a young mass in anomalval:

1864 CHARVIN, 'La Navigation Aérienne par les Aérostats.' Paris. 1864 Nanar, 'Memoires du Géant, preface par M. Babinet.' Parie.

1864 L. Davin (Membre de la Société Agnesistique et Météonlogique de France), "Solution du Problème de la Navigation dans l'Air par la direction des Aécostata."

1865 ARTHUR MANGIN, 'L'Air et Le Monde Aérien,' Chap, vii, Tours.

Amerroon sighti; she found it vain to trust The furthioss column and the crumbling best. Huge moles, whose shadow stretch'd from shore to shore Their ruins perishid, and their place no more; Convinced, she now contracts the vast design,-

And all her triumphs sink into a coin.

1783 JOSEPH and STEPHEN MONTGOLFIER. Becare. 1783 Pour evoir rende l'air navarable. Bronze. 1783 Experiment of the Champs de Mars, August 17. Bronze. 1784 Ascent from Lyons, January 19. Beenze.

1784 PAGEO ANDREAST, first ascent in Italy, 3rd March. Broune. 1784 Viscour Luxanna, first ascent in England, 15th Sept. "Et se rectinies theoria tollit in estra." Brooze,

## MEDALS

A earnest orb each grounded concurrent keeps: Bereath her palm here sad Judea weers; Now scantier limits the proud arch confine, And source are seen the presente Nile or Rhine; A small Euphrates through the piece is rolf'd And little eagles wave their wings in gold.

1785 BLANCHARD's fifteenth awant. White metal. 1785 BLANCHARD's twenty-eighth ascent. White metal. 1786 BLANCHARD's ascent. White metal.

1803 GARNERIN'S asorat. Silver. 1823 ISAAC EARLYONAN SPARROW, Oxford. Copper. 1836 London to Weelburg in eighteen hours. Silver.

#### ART.

Wages from the secred garden driven, Man fled before his Maker's wrath, An Angel left her place in beaven, And cross'd the wanderer's sunless 16th.

Twas Art! sweet Art! New rediance broke, Where her light foot flow o'er the ground; And thus with scraph voice she spoke, "The curse a blessing shall be found."

She led bing through the trackless wild, Where moontide symbosy never blozed: The thirtle shrunk-the barvest smiled, And Neture gladdened as she gazed. Earth's thousand tribes of living things, At Art's command to him are given, The village grows, the city springs,

And point their spires of faith to heaven He reads the oak-and bids it ride, To guard the shores its beauty emeed:

He smites the rock-nedwaved in pride, See towers of strongth, and donne of taste. Earth's teening caves their wealth reveal, Fire bears his banner on the wave, He bids the mortal posten heal, And the destroying limits to save.

He placks the pearls that stud the deep, Admiring Beauty's ho to fill;

He breaks the stubborn marble's slore. Rocks disappear before his skill :

With thoughts that swell his glowing sonl, He bids the ore illume the page, And proudly seeming time's control, Commerces with an unburn ace.

In fields of air be writes his name, And treads the chambers of the sky; He reads the stars, and groups the flame That quivers in the realms on high.

In war renowned, in peace sublime, He moves in greatness and in grace : His power, subduing space and time, Links realm to realm, and race to race

SPRACUE



PRIMARY VOLANIA

#### THE BALLOON.

The eviry skip at anchor rides, Proudly she beaves her paigted sides, Impatient of delay; And now her silken form excends, She springs aloft, she bursts her bands, She floats upon her way. How swift! for now I see her sail High mounted on the viewices gale,

Aster

And speeding up the sky ; And now a speck in other lost A moneyat seen, a moment lost. She cheats my dazzled eye. Bright wonder! thee no flapping wing, No labouring our, no bounding spring,

Urged on thy fleet career: By native buoyancy impelled, Thy easy flight was smoothly held, Along the silent sphere.

No carling mist at closing light, No meteor on the breast of pirht, No cloud at breezy dawn, No leaf adown the summer tide More effortless is seen to glide, Or shadow o'er the lawn.

Yet thee, a'co thee, the destined hour Shall summon from thy airy tower Rapid in pecus descent; Methicks I see thee earthward borne With finocid sides that droop forlors The breath ethereal spent.

Thus daring Faccy's pen sublime, Thus Love's bright wines are clipped by Time : Thus Hope, her soul clate, Exbales and this grosser sir; Thus lightest hearts are bowed by care,

And grains yields to Fate. Annual Register, 1811.

#### MR. COXWELL'S ADDENDA.

This Addenda of amusing anecdotes was kindly sent me by Mr. Coxwell, who calls it-

ASSOCIATION SECTION FROM AN IMPORTMENT DIAGRA

in the beginning of May, 1848, I received an invitation to make some ascents at Brassels. The preliminary arrangements for the supply of gas had been entrusted to an agent, who was altogether destitute of that tact and forethought which ensure success to many of our English managers. Contrary to a previous understanding. I was obliged to fill my balloon at the grasworks, and to attempt to remove it in an inflated state towards the Prado Gardens. This is at all times an objectionable process, especially in windy weather. It was the only alternative as matters stood, and consequently we set out before daylight to inflate the balloon, with a view of getting it into the Prado before the citizens were astir. Grey-eyed morn broke in with serenity and promise; but as weather, like friendship and many other things, is not to be depended upon, we seen best to quarters, as nantical men say, and commenced action. The balloon began to display its proportions most satisfactorily, and the lookers on threw themselves into various postures indicative of approbation. "Ak! Mossieur Coxret," said one of the party, stroking down his board, "you vil her was very for day-no vied, no nothing. Your transport vil not be difficile." Hereupon I glauced around the horizon, but returned the weather-wise gentleman no reply; he then observed my countenance so narrowly as to perecive a slight expression of discontent. "Tat you mean?" said he, "Ty you from?" The fact was, a small, solitary, darklooking cloud had made its appearance to westward, and although at a considerable distance, was wending its way up with rapidity; the configuration and general aspect of this little intruder on the blue sky foreboded wind, as it swept along swiftly, anon changing form and hue, as if agitated by sudden atmosphoric impulse.

"Gentlemen," said I, "there is a strong wind prevailing at ne great distance from the earth; and if it does not extend to the surface before the balloon reaches the Gardens, we may consider ourselves fortunate.

The hystanders protested against the probability of this apprehension being verified, and discussed the matter with flourishing action of the hands and seach useless verbiage. They would fain, too, induce me to enter upon argument; but I rejected, I hope politely, all invitation of this sort, and informed my right-hand man that the order of the morning must be smart work, not words. We immediately directed our attention, while the foreigners were talking, to secure the netting to the hoop, so as to get a fair and equal bearing from a strong centre, and had just completed this necessary precaution, when the long green grass and verdant foliage around us bent to losward with a low, murmuring sound; and in less than ten minutes after Nature had given her first gentle but unmistakable symptoms of an approaching gale, one fitful gust broke upon us, creating, as it acted upon the half-filled balloon, a boisterons, bellowing sort of music, which only loud Borens is accustomed to indulge in.

Around the hoop and in the car were placed about forty half-hundred weights, there stationed in order to stoody the restless machine, which was soon performing most graceful sweeps over our heads, to the no small amusement of a host of lookers-on, who added to our numbers in proportion as activity increased in the city. The manager of the gardens was for a precipitate retreat to the Prado, but as that was altogether impracticable until the wind dropped, it was necessary to exercise coolness and generalship in the predicament which we were placed in. " Vat you rel do?" cried the spokesman of the Belgian party, the same who promised "no ried, so nothing." "Why, sir," I replied, "the fact is I have to contend with a most formidable epponent, and I think I can't do better than imitate the plan pursued by Wellington at Waterloo; that is, to receive the attack, and act purely on the defensive. "Then, ser, you will not go to the gardens?" "No," I replied; "I have enough to do to stand my ground." Our friend, in common with his companions, was quite ignorant of the power of a large balloon when subjected to a strong wind. He proposed my advancing in the very teeth of it; so by way of demonstrating the difficulty with greater effect than mere words could produce, I gave orders for an experimental move forwards.

Our forces, so to speak, were thus divided -- twenty burly Belgian mechanics at the car; six to each guy-rope: about forty to two strong roses festened to the hoop, with a view of pulling the balloon forwards; myself in the car giving directions; a friend, who was tolerably well up in Prench, acting as interpreter; manager, and the public gurden subordinates, small fry, &c., were at their respective posts, shouting veciferously, and thereby confounding the second in command. In this half-formidable, half-comic way, we were grouped, when I gave the word "Forward," Away we dashed for the first few stees right handsomely, when suddenly flap, round, up, down, went the balloon, rolling her huge head to the very grass beneath, upsetting more than half of the party, and forcing the rest into grotesque or awkward positions, as the case might be. One fellow, grasping a rope more tenaciously than prudent, was thrown up as if toucd by a bull, whilst all were driven twice as far back as we had advanced; thus preving the truth of my statement, that we had quite enough to do to stand our ground, without getting further into

Having moved sidoways towards a somewhat sheltered spot, a fresh difficulty presented itself in the shape of a file of soldiers, who drew up in close proximity to the balloon, an officer advanced and summoned me to his presence. There was something mighty ominous in the under-toned conversation betwirt this officer and myself. I could perceive that all parties lent their ears and preserved the utmost silence. "What is it?" cried several eager bystanders. For my own part I preserved a cautions silence. My agent, who knew much of men and manners, took another view of the case, and even had the temerity to increase the highly-wrought curiosity, by rushing to the car and crying out only these words, " Watch as." I could not but think that the request, or rather its translation in Flemish and French, was addressed with but ill-grace to persons who were observing as closely as possible everything that passed. My agent, who was now in the car, took his own view of the case, and it was strange that " Watch us," in its laconic address to the percentive faculties, produced more effect than a direct answer to curiosity. Whilst "watch us" was working its magical influence, we had removed all control over the balloon, save one rope that was attached to the liberating-iron. Quito mexpectedly, I pulled the trigger, and up we bounded, to the astonishment of everybody present. A cry was now raised that the rope had broken, but the officer, who knew to the contrary, then came forward and explained, as we afterwards learned, the auddenness of our flight. "I was commissioned," he said, "to inform the aeronaut that the assemblage of persons caused by this balloon is disapproved of by the anthorities, during the present unsettled state of political affairs. I requested, therefore, that as the balloon could not be removed to the Gardens, the gas should be let out, and the balloon packed np." This Mr. Coxwell declined to do, stating that an English aeronaut could not do that; so he resolved, notwithstanding the storm, to remove the balloon his own way; and I think his tact may be complimented. After this declaration, three leasty cheers were sent up by way of approval; but they reached us faintly as we glided away with great velocity, and in less than twenty minutes got a long way below Autwerp, where we made a rough landing on a large common, and returned as quickly as possible to Brussels.

As the press was pleased to oulogise this trip as something daring and extraordinary, I was immediately solicited to make another, with the inviting provise that the pipes should be laid into the Gardens, so as to obviate a similar unpleasantness. The inflation this time proceeded under diametrically opposite circumstances to these which accompanied the first, and the appearance of the whole affair struck me as affording an emblem of life in its varied phases-one period cloudy and distracting at another mild, sunny, and all that the heart desires. The balloon now stood proudly erect, and seemed to bask in the sunshine, occasionally evincing a tendency to rise in the upper air, as if to escape the heat below by seeking the refreshing coolness of the skies. Two gentlemen presented themselves as candidates for aeronautic fame, and I closed with them both. At the appointed hour the Garden artillery gave forth a miniature peal, and we set out for a calm, delightful journey, hovering over Brussela until we were 4000 feet high, when a gentle current wasted us towards the plains of Waterloo. It was my first glimpse of the battle-field, and distance had reduced its bounds to such insignificant limits, that I felt hardly reconciled to the fact that on that little cluster of fields, which looked so green and rural, the fate of Europe had been decided in so

great and sanguinary a contest.

I soon found that my composition constrained rather broughy in tasts and character. Mr. —, or No. 1, was provided and indexend of the bounties of status, while No. 2 displayed as mechanical and unthermated the original control of an indexendent of the status of the provided and the control of an indexendent of the control of the contr

### THE BALLOUS RACK, 1860

To the Editor of 'The Tones.'

Church-road, Tottecham.

As it was automated in your improvisor of Schrichy that two balloons would accord from the Crystall Palace on Monday, the 22nd, I begt to supply you with the particulars of the race, in the event of an authentic account being considered sufficiently interesting for publication. At 2 Park, the "Man" being then about two thicks inflated, a series of partial accents twice place from the Palace

grounds. The breeze was high for that experiment, but a large number of helies and gentlement were gratified; and during these short trips, the "Queen," my second balloon, was being filled in the archery-ground. A friend of mine and smartner servours, Mr. Alka, had updertake to pilot the "Queen," and one, among

A rivent of mine and amender servicion, are Alban, and undertaken to prior too "Quoen; and one, among several applicants, I selected to accompany me in the car of the "Mars."

Nother balloon was succh more than half-full at starting, but the "God of War" being the larger of the two,

cashed use to take one passenger, when the conditions of the more, viz., an equal amount of ballost and lifting power, became fair and equal.

At 4.9 the start took place, when the "Queen," like a restiff racer, made a "gibo" for terror ferna, by way of

A "A ver the same too box packs, which and "options, men a resum more, massin a "give now ravely result, on way of testing, it would seem, the mettle of the rider. Once away, however, the restain analyst mounted high and source above." Many, as much as to say, "You are the representative of strife; I rise above such doods, and will have no companionship with you."

The nation of the respective balloons were red and blue, but at 3 widers red, the highest, appeared to know betted out of the course, as we had the red of it allaughter. This diversaments resourch the two joilway spirit with us in the blue car, and out streamed fifteen pounds of sand, when we sighted red, and beato the situace of mixing with a stentierian material about, "to-cours" about "these are you going to?" "Come up and oce," was the idental reply.

The challenge was not keep atterned when we found ourselves at equal elevations, just 4200 for from the

earth by accurate measurement. As we passed the "Queen" we right loyally defed our caps and gave a cheer.

"Mars" was now in the secretaint, and quickneed his pace with automishing rapidity.

"What is the secretaint, and quickneed his pace with automishing rapidity.

Whether the "Queen" was calmly awaiting the natural course of events, or resting on her laurels, we could not then and there decide. Away the "Mars" hope-up, up, till the chill air and barometer told of over 9000 feet elevation, while

a survey of the other balloon-now a top, apparently, spinning over Greenwich-convinced as that the odds were in our favour, and that it was 4 to 1 the mastery would be with "Mars."

The approximate of the certs, or, as it appeared to us, the glocatic may with a golden ball proving cores is, we smelthing of grows, and extractly interesting. The varying opinion of the balloon counted meconically to be at fault as to the direct lime of progression. The "threet" second to be performing non-coventries assume that the contraction of the properties of the contraction of the c

The shades of evening having now set in, I decided upon lowering, and finishing the race at equal altitudes.

The eye of my followtraveller, Mr. E. Shith, was, in obeliance to caller, buy with the novements of our opposent. M. Aid is neptred the "Occurs" had halled on a dark path of shost two times aquare, which I recognised as a large failor richel. We now devided upon following exit. A thick astronated for war rising over the Exect Landerqui accretion and fastanced forms. The more had been faired and precise of surprising prices of vertex a orien of montigally excess such as articles and the obligator active two to each a glumps of—from recollection, and manner of the breat, would have beaded as in deposing on excess instance of short parts of the surprising of the prices of the prices

That heatiful rice beguiled us while we journeyed on to Doblinghunt, in Enex, where we alighted in a mendor at 6.5, being about treenty-five miles from the Cyptal Plades. The "Queen" descended for miles southeast of Barking, and the descent was elverly managed by the anatour, who declared, when we met in town, that if he had had more gas and ballout be would have tell me a neutrant trip into Smallout.

> I remain, Sir, yours obediently, HESRY CONWELL.

#### A Nature aways THE CLOTTE.

In a communication review by Mr. Wester, the Secretary to the Berly Arboreton, the celebrated sermout. Mr. If Crewall, writer as afforers—"And seconding from the Crystal Pakes or Monday," I also to go off to Dobby Cath, where I made another trip on Weshesday. I had a second interesting wege the mean night by moneight. After hading up posseques at Tarmourch, in Westerbakin; I bland there however, period of the hospitality of a former, and intered again at eleven orbeit; the mon being at the full, and a fine sky overhead. By dight was to weak the hallow up to Ennisha, the wind being first, and to only a width among the cleaning the contraction of the state of th

Seventes para since I mak three accords from Cabadeds, when each time the car was excepted by a gratuman with the place and graviterand respectability. As we declored that we was weblance highed from no such the market-form and, old enough to relate, we decembed flow to the relations of one of the possegars, and, at the request of this solid properfect, the gas was retained all sight, so us to have modern trips for following morning. Defere we flustly accorded aquist, the greatment's family visited the "Sylph" and each is turn had a partial accord. Lard of all came the delect daughter, a channing young hely of shot therety. Her process this has not both the tops, and I all-field her an accounts energy of their general. I shall never forget the delight and enthusion subjected at the parameter leve. "This is equisite seed beautiful in the extreme" exclusion and enthusions subjected at the parameter leve. "This is equisite and beautiful in the extreme" levels and an enthusion subjected at the parameter for each of the contract of the contract of the process of the contract of the contract of the contract of the contract of the process of the contract of the process of the contract of the contract

I come mode a night ascent from Vurshall Gaviese, in company with two gratheness, and after discharging flower/street seem door near Crephen. It was a will night, and we pailed up without a grapule of the lane possible shele. The contine of a small formhose congite my attention, and was nearly underscash as. We could be a small continue of the continue of a small formhose congite my attention, and was nearly underscash as. We could be long coursel for the high, i. -1 table, "and i.," a veen alware a life in lane; the particle or-desirable yield reas, and life to not one they dan't both up. -1 to was manusally dark, and I sum; east. "Vanjah, give us a loash law, will yet" at the same time I allowed the "spike" to drop within a bott variety for of the ground. A garty, eight, must cause boliding along towards the being, canallo in hand, and said. "Alb, was want? What's there?" must cause boliding along towards the being, canallo in hand, and said. "Alb, was want? What's there?"

#### Of those I am who thy protection claim, A watchful sprite, and Aerial is my name.

Then one of the gentlemen commenced singing, "We fly by night," when down dropped his candle and quickly field the countryman, exclaiming, "Eh, miseas, but he's come at last, and no mistake?" "Who's come at last?" cried 3 P 2 the letter half, beneding out with another light. - Look ye, Shly\*, "said he, pointing to the silin, whit outside of the ballow, "shatt be ded gamina hissulf or she Ira a Datchana." To have created further fright what have been carrying a pice too far; we therefore informed the old pair of the nature of the apportion, but associahants and incrededlity were so strong data one of the party had enough to the coarsine than we not entered the balloon was seen, filt; and small, and we correleves handled, that the good people believed one steep of an acturnal journey from the handled and the shalloon was seen, filt; and small, and we convolves handled, that the good people believed one steep of an acturnal journey through the atmosphere.

In one of my trips from the levilion Gardane, North Woodwick, two sasts were coupled by a couple of government, one of which are for lived to the level of the lived to the li

Now for a "night in a field, a bod in the car, and a breakfast at a farmhouse," Many years since, I made a series of ascents from the New Globe Pleasure-grounds, Mile End Road. The day announced for one of these weekly excursions was inauspicious, and the undertaking was almost postnored. At midday the cleads lost their leaden aspect, the rain ceased, and the sun broke forth; consequently I volunteered, although late to begin, to inflate the balloon. The wind being beisterous, I was carried away beyond the customary length of evening flight, and I wandered away down-goodness knows where, anticipating that the breeze would go down with the ann, and favour me with an easy landing. This expectation was realised, but it was quite dark when I alighted, and the place appeared uncommonly outlandish. Being alone I required assistance, for which I sung out pretty lustily; but a full half-hour elapsed and no one came. I tried to let the gas off, but was terribly bothered for want of a few sturdy belymmtes to press the netting. After I had mastered the wayward "Sylph," I resolved to set out on an exploring expedition, and to obtain aid and refreshment. I found a gute close to a cross-country read, so placing a Immp of chalk which presented itself to view, opposite the gate as a landmark. I struck out, and, after walking for a quarter of an hour, came to a farmhouse. "All right now," thought I: "here, at least, I can obtain assistance;" so away I bounded over the gate, when out sprang a tremendous dog, affording me only a hair's breadth escape for my rashness; for I just eleared the gate, I can't remember by what particular means, when the faithful creature snapped with a furious set of grinders at my heels, so that I decamped, musing over the old sdage, "Discretion is the letter part of valour." "Now then," said I, "let's try the other way." I retarned to the gate where lay the piece of chalk, and passed by, not exactly in the best of temper, and walked again fully two miles before I came to a village.

Having footings, I hastend on, and not a webman, returning as I general from the abbone.

"Hills, np. mm. I chief, "sport the very prema! wast; it see to the first publish come, and II give you a skilling. The must subspect, looked at me, shook his book, and said, "No; I think you're boot about." "Almon," and lift, "Foot has decapited first, and yet along Virty but some only on its abbon." "Due not so you have," and has a single property of the new," at Yet public mode on its abbon." Then may not have with the company of the new, "A this junction I havely have within too is, whether to turn up ny devers and have a round me are think of the public have." Note that the new stay of a phelenum. I turned from the civilian to the official, and now, thought 1, I'm as good as bowned. "Good coving, offerer; their a stranger here, I can use the followed for a public louse." "Note," and then a replicate the strain of the public strains of the

from London, having descended a short time since with my balloon." I could proceed no further with my tale, as the window was alammed down, and the man, indulging in a hourse lough, mid, "That's as guid-a-an as Fee kered for some time, that to."

It may be thought that I am cover-marring this stream, but I am really abbling even within the festimeneous free and textage and herital conduct will presently treaspile. "Note for an one restrict," chough I, "and I will move on." as the poleoman arbitred mr. I thompoil at the door of the next public, and readered for restrict, but be policity that we up the widness, easting "at was no late to serve." I shall be extraorally disjuily if you will reforch a traveller I in mixed. Howe, leaft will psy literally. "He first was the widness which we go and a shall be extraorally disjuily if you will reforch a traveller I in mixed. Howe, leaft it will psy literally." "He first was proof, with he you from the stream's oblight of service and the mixed one, flay over one if you are you, of our out factor. Now, in a trave spirit of parties I shall we see out of explain just what I and and this relativing period of any existence. I would rather past over, but the work of the proof of the proo

On reaching my oar I resolved to make up a sort of lad, and rough it. Some ballast-bars served for a pillow, and I closed in the basket with the folds of the balloon, and thus boasted silken curtains. Stretching out full length, my feet came in contact with a small basket, which up to this time I had forgotten. How I came by this, and what it contained, I must tell you. Whenever I ascended from the New Globe Pleasure-gardens, it was the considerate habit of Mr. Gardner, sen., to provide me with something to comfort the inner man. True to his invariable practice, he had slipped in the little basket, and never shall I forget how acceptable and palatable were its contents. There were some nice beef sandwiches, a little brandy-and-water, and a cigar-case. Harrah, said I, as I moistened my tongue; bravo, Mr. (iardner, a friend in need is a friend indeed. And then, the cigarsif ever I enjoyed my eigar and a wee drop of cold without, it was on that identical night, when, Robinson Crusus like, I lay enseeneed in a strange county, without even a man Friday to assist me. Having finished my repast, and tried in vain to slumber, I thought I heard voices, and sure enough on removing the curtain I caught some undertoned accents in an adjacent field. Immediately I sung out, "Here, my boys, give a friend a help, will you?" but all I heard were fast receding footsteps, which induced me to come to the severe conclusion that some dishonest people there certainly were in the neighbourhood, and that these were poschers-perhaps, though, I was wrong,at any rate they were not on the same business as myself, or they would not have bolted. I then remained in my sentry-box until six o'clock in the morning, when I heard some workmen on their way to the fields.

The billoon and our hold already attracted them, no. I by still still they were at hand. On jumping up this-back-back, the worthine hooded perfectly swittednest; two ran is, and the not steep reporters as no specific why; he should be been been been been been proposed as the probability, the around to be source the party selection grows any "And," and he ar I should pre-order a contain any which the steep is not been such as the steep is good and he are I should pre-order a contain make for the part. After a double of few soul explanation, I pot to a furnishme, when the host levend up tale, but was meantably distant until he had hid about on the holloon, and examined the our Nobel copy outlike the norm friendly or hospitable. This furner informed use that I was down in Hampshire, about trenty mides from Baningskeit. But of hot he need any large goe the assessed relievy ratios, and, on gaing frough the cillipse, we hant that it had been visited about a foretight perionally by ages of the swell such, and that all ranges we have the state of the soul and the strength of the state of

During the cerealist year 1920, the agriculturies of Enex were said to be worked up to a high pixth of examplestical by the formest visite of accurances, who not only report over their craps the assumed Econch, but saturally had the audicity to bring with them live outle, in the slape of table, onlyes, and horse (Makane Patterials assents with audicida as here addited by 1. These probately meanings were all to fee Proved original Patterials assents with a standard as the analysis of the pattern and the extrema minus, and had even ee one consists rised hard to upset East Han Church, when, in the latter than the extrema minus of the contraction of the extrema minus of the extrema minus of the extrema distribution of the extrema distribution of the extrema developed assistant, and we only successful in handless place previous and animaging the own company. The frames therefore formed a club, with the fewer intention of spreading man traps, spring gave, and either doubly wargas, with a wive of surviving over these robless of the day who have its quality original to the relative state of the Foor furners, as from mys. The this is said to have spreage, up not so much from a desirency, the imaging of in these factories of furners, as from mys. by the farmers took place, not a hundred miles from Rainham; and a winged reporter, a friend of mine, managed to dot down the heads of some speeches which were made prior to the breaking up of the club.

On the 1st of Ageil it was soved by Flint, that as the location night now be expected, the trips should be locked ba, and duly set; seconded by Seed. All, Seed, in apporting a protective no measure, mail he filled certain that if proper firmous were displayed by the processor, the serial tribes would be driven away, serial satisface variable that if proper firmous were displayed by the processor, the serial tribes would be driven away, and set in the serial tribes would be driven away, and one and the serial tribes would be driven away, and commoded Mr. Stingingsrettle for his able curvition when he run four miles in chase of a ballon, but was undertained commit for his like location of four slace.

Mr. Aska Ball declinal having anything more to do with the clinb-in short, he meant to rates. He was free to cander that his concience had uploaded him ever since he was a party to the sourm of a hall-lea, and to demad compensation for the higher of none butterency. Graphene present very well knew that it was the nardon willsquer who had does the entire damage. If one's own neighbours wouldn't respect year property, much loss would strangers and foreignes.

The Rev. Mr. Parev. on the part of his parishbours, abverted to the temptation to go nature by those

ballsons.

Mr. John Bull: "Which temptation your Reverence should teach them to resist, not encourage them to fall into. Having," continued Mr. Bull, "duly considered the objects, intentions, and doings of this club, he begged to withdraw, as it was unworthy of a British farmer to resist that which fell from the clouds."

This is a quaint notice from my friend, the winged reporter, and I really believe Mr. Bull fairly represents our English farmers, who are part of our national pillars and our pride.

During the antumn of 1849 I visited Hamburg, and obtained permission to ascend. I was much struck with the extraordinary preparations made by the authorities for the preservation of order. The grounds were surrounded by cavalry, infantry, and police, and the whole scene was martial and imposing. I think it was my third voyage when the balloon was driven to and fro by shifting currents, that we lost sight of the earth, owing to a tier of dense clouds, and came down rather unexpectedly upon the country people. Our position was in Holstein, near a village thirty miles from Hamburg; and at this time the war was raging betwixt the Helsteiners and Danes. I lad three passengers in the car, who were watching the fields as we descended, when at an altitude of about six hundred feet, pop, pop, bang, bang, bang, went some guns, the hissing whirl of the bullets acting as telltales in the air. " Why, the people are shooting!" exclaimed one of the gentlemen. " Nonenes!" cried I, "they honour us with a salute; but keep your heads inside the car, and put out ballast." This order obeyed, bang came another volley, but none of us were hit. "Dies mal is die luft-ballon caput," pried one of our party; "this time the balloon is torn," "Nothing of any consequence," said I; "for you know it becomes the captain to impire confidence, even if the ship is sinking." Certainly a few shot-holes were observable, like stars, through the balloon; but these, in proportion to the volume of gas contained, amounted to no considerable outlet, and not sufficient to bring us down while we had ballast to discharge. A council of war was now held in the vapoury embraces of a dark cloud, when it was decided that we should descend as quickly as consistent with safety, shouting as we approached the earth that we were friends from Hamburg. This last exploit answered admirably. We were down and anchored before anybody assembled. Our mission and starting-point duly intimated, and ourselves on friendly terms with the country people. Those who came up afterwards freely confessed that, supposing we were spice from the Danish camp, they deliberately shot at the bulloon-a liberty we deemed it expedient politely to excuse. This was a curious adventure to tell in Hamburg, and my companions made the most of it.

The same year I made a long sky at Forlin, seconding frequently from the far-famed Krells Winter Guben. Here I calibides of just for boundaring a fester with consume inside. The appearance were an alluled once for public display, but the soral to hashadeant attended great sky and the strength of the soral to hashadeant attended great sky and the strength of the soral to have been strength of the soral to the public before how the soral to the public before how a threatening spect, as as well removable. Bellin was in a state of single, and all out-door ammounts were carefully regulated, but the masse cause too fieldly together and justiced makeded. As General Wangel has conspicious in supposing the evolvation of the Rip people had like in infraregist a smalled out to restore soral to the state of single, and mild out to restore soral. The access of the hallow, however, fall some for the dispersion of the most both fixed papears. The day of blooking I was to have make accessed trip by a soral point in the soral to the best of the size of the soral to the strength of the soral to the size of the size of the soral to the size of the

"Sylph" my own way. As to opening the vulve and starting the gas into the sir, that would never do; so I whisperd a friend to help ne faster, on the car, and presently we mounted short. The next day! rated apon Herr von Hinkeldey, and plended for an extension of his favours, and I can spank highly as to his energy of character and directants eputation.

Another adventurous incident in Germany is a voyage of nearly two hundred miles, which I accomplished with continuous of the name of Henkel and Herr Hildebrandt, the Hef-maler or artist to the King of Prussia. We started from the Schutzenhaus-grounds in Berlin, the wind being high and the firmament murky. After we had been up twenty minutes, I pointed out the River Oder, "So soon!" cried Herr Hildebrandt. "Why we must be travelling at railway speed, for that part of the Oder is more than twenty-seven English miles from the city." Sure enough we were going at a rapid rate, so I told the voyagers they must make up their minds how far they would travel, as a few minutes might cost them an additional thalor to ride back. "Never mind," said they, "let us go as far as possible." "That is before dark," said I, "as by that time we shall make a pretty extensive journey." After calculating, singing, joking, gazing, and feasting, we betook ourselves to the descent. But where were we? that was a question which neither of the Germans could answer. We had seen the Baltio, and were progressing towards Dantzie; but the locality beneath us was barren and strange, and darkness, too, was setting in apace. The squalty weather remaining unchanged, we experienced a rather rough landing, but still without the least casualty. Whilst approaching twen from I observed a distant light, which I supposed to indicate a dwelling. When we had emptied the balloon, we agreed to walk off in three opposite directions, and on arriving at a road to give a signal. Neither of us being fortunate enough to discover a track, we all returned, when we determined to start off together in the direction of the light. Two miles' walk brought us to a princely residence, where we requested an interview with the master. "He is a baron," said the gate-keeper, "and don't care to are people who are strangers." "We are from the upper regions," explained Herr Hildebrandt, "and have come by talloon from Berlin," "Becare how you triple with an old soldier!" cried the keeper, somewhat disconcerted, "I am stating the truth, and request that you present my cord." After parleying for some time, a large piece of silver, I shrewdly guess, was placed by the side of the card. It then soon reached the Baron, who came forth and heard our account of ourselves. What with our careless appearance and late hours, the Baron disbelieved our tale. "Please to look at my card, Herr Baron," cried Henkel; "And at my passport," said I, which I always took with me. Our papers examined, the next thing was, "Where is your balloon, gentlemen?" "It lies in a field some half-hour's walk from here." Further doubts arose; fresh difficulties sprung up; when, at the instigntion of the Baron himself, a band of work-people was formed within the baronial walls, and away we started, ourselves in advance, and the stalwart troop in the rear, ready to assist us if our report were true, or secure us if false. When we arrived at the place of descent it was quite dark, and we looked in vain for some time with lanterus. Hild-brandt predicted where it lay; Henkel guessed; but I was at once for a practical alternative. What was it? Why, to nose it, like hounds, as the silk always retains the powerful edour of gas. Accordingly we opened out as for a hunt, and my own practised mosal organ had the good fortune to catch first scent. The balloon discovered, the Baron shook hands. And we slept at the hall, and were feasted like lords.

### Scenes from the Balloon Car in the year 1850.

The concluding al freeo fetes at the Crystal Palace were accompanied by two interesting aerial voyages by Mr. Coxwell. The following is the aeronaut's narrative, extracted from his Diary:—

Ballconing has just been introduced at the Crystal Palace with entire success, and I have reason to be proud that my representations on this subject to the manager were, after some little hesitation, acted upon with becoming spiral.

October 1804, 1859.—My first ascent from the Palaco Park took place this day. Owing to the lateness of the season we had a hary afternoon, and there was nothing very remarkable in the sepect of the earth's surface; but ample amends were made by withensing a sphedick doubstace, which presented itself above.

I had three passengers, Mr. Ingelow, Mr. John Allan, and Master Bucknall. On first rising a thick mist small place of the but at an altituda of six hundred feet above the place of starting, a strongly defined nebulous mass unfolded itself, and ultimately appeared to be a widely extended range of rossule.

In passing through these clouds I formed a rough estimate of their thickness, and prepared my fellowvoyagers for a transition at once sudden and imposing. At an elevation of one thousand four hundred feet a fixed of light heles spon as, and we men through the done of a magnificent cloud, and extered upon a seron of empowing grandow. It was not a florly intion distantal picture, who is decidated ascentizes for where the declining sun import ruly better to the vestern sky, but a plain, uniform comes of florey doubt, while ruled along with the unitest regularly to a read expanse, during out all view of the earth, and ressembling a see of report agriculture by a grands between. The entire appear registrat appeared to be in a state of report a few sin's were observable high and the state of the contract of the co

> For yet above these walled clouds are seen (In a remoter sky still more screen) Others, detack in ranges through the sir, Spatien as more, and comotions as they're fair; Scatter'd immensely wide from East to West, The breastons semblance of a facil: at rest, There to the repair'd united above preclaim The mighty Shepber's eventuing hanns.

One of our party had just returned from Switterland with vivid recollections of Alpite travels. The Iudicose, the protected, was much superior to momntain secency, as borded upon from one of their tops; whilst cloud-land was superdurively grander, embersing all the bold and beautiful features, with the advantage of being raised into the very makes of the clouds by almost fairly means, and altogether without personal exertion and innonvenience—who results which not unfrequently must be heightest pleasures.

So exhibated was Mr. Ingelow, that he volunteered a song, which led to a regular serial concert, our respective seices harmonising telerably well, or appearing to do so in that silent spons where the vocalists were at once audience, critics, and performers. After singing, we tunnacted a little business with the instruments at ore disposal, dotting down height, temperature, humidity, and all the facts and figures enumerated in the following slab.

. . . .

So other five velock the silence which reigned counted was wantedy disturbed by We. Allen, who esseped to apprimentable upon the effector of close and the prospection of soon. He saked premission to about, and it was readily granted. First he hallood up the next or subject which caused the intended sphere to three which the saked the second of the saked the saked

Buring the passage of the choick, a railway boundaries greed to write in shell or yet dismay, said as it was unaccompanied by the colling conside of a time in socious, you conduct that a station must be interly underreastly. The amounts to reject to the lockes for the last finite primes of trow from all the last discussion. Two of blightly and the interlockes are considered by the prime of the primes of the last discussion. Two of blightly are the interlockes, Presently a sprinkle of gas-langest tribuble forth, and there we have all solution, and ascertained that we were ever a small form. As those was no properlyide undercorrent, we remained during the contract of the primes where the contraction of the primes are the contraction of the contra

For prehential notives a half-lag of finely-sifted and was sent down instead of convelves, and we re-entered the choical a quarter of an hour laker, daring which time the stems which was insequently-hourly we then probably the property of the second time, but three was no indication of a change, and it was determined to seek a ground hence by dropping down within a few landered fest of the house-rod. Here a note-lety current befriended as, and the "Queen" moved under its influence at a brisk pace, and it a forestable place for leading presented itself about two units from Papens, where we adjitted as also clock; the leng then dark.

Taceday, October 25, was one of those days when acronauts would rather be within doors by a genial fire that doing duty in the crips air, with an inch or two of anow under their feet. So che was the state of the ground during the commencement of the inflation, but the day wore on tranquilly until about 2 celeck, when

surrounding foliage bent to a fitful gust, which came upon us without warning, and soon increased to a half gale. There was an eminous bluish haze to windward, too, and the barometer had been falling since noon.

No source had I got my contage and network occurred, then it became evident we were to have a stormy verning. At half-past 3 o'clock, the groat fountains having began to play, I attempted to move the "Queen" (my balton) before the central transerly, and although, at fewent, fifty soldies assisted, it being the Balachary 5/r, yet so everyowering had the wind become, that we were compelled to come to a doad halt, and arrange the assent from the arrefer recommend.

As it was of the utmost importance to get away as quickly as possible, I turned a deaf ear to three or four cambilates for an ascent, but at lest ingred to take one gendleman (Mr. Cambley who would not be desired a sear, conscribinating the boisterness state of the day. Admiring his courage, I ordered him to "nime is," and, directly the first hall favoured as, I public the trigger, and away we went at a tremesdoes pose, bounding past the great most hover, which stands there humberfor fect over the place of starting.

Three minutes had heally deped before we were working through the lower far of leadure closels, whilst the rain was persing low in foresters. 4–18 be ber rise, and I, it sames to a spousition play on capacitars were may possibly somple water as we got height? Stree enough we did, for in another minute Mr. Caulfer deven up attention to some. We were now repsily descript closel after closel of dress and therestimal sponsarse. At this electricia we must citize have served in a supporter current or entered a serve of whirlwind, set he labeled because Mr. Caulfer have a free of the supporter current. We could have, to a humaing sound among he avents. At such perspectively which is adapted; unamand. We could have, to a humaing sound some place where Mr. and show, and around no. This was a feliciditing with booking space, where the writhful wapour lowered had by and second to note for inshelick and there we to themselves to the terms of an electrician description of the reinhelick and there were the market as a felicidities.

Directly under the our was a formidable looking sisten, which we must needs penetrate to obtain sight of earth. It was oft on ten fliebling, and it was morrorer expedient to cutall our run, as the storm increased every minute, so down we dipped for another shower-bath, when the min rattled, and new forms of cloud closed around us, and appeared to draw the "Queen" lines a yearing galf, and there award no a thorough directhing.

#### Still over head The mingling tempest weaves its gloom, and still The deluge deepens.

If rough is a good as foot of any one particular liquid, it is early that of plring rain. To per set of it I hastened our descent, and perpend for a rangle, one. As we search the analous fough algorate in full guild, and the medica looked as if it was on their part instead of one. The grapular mode in first prip in the centre of a game field, harried by proag in the vector and an alwards a man of do do in the size, like a safety-pield proud looked in the size of the safety-pield proud looked for the safety and safety-pield proud looked for the safety freely a size of the harded property of the safety and the safety of the safety and the safety of the safety of the safety freely safety of the safety

Wet and weary, we made for the "Adam and Eve," where mine host and his considerate wife provided us with a refreshing cup of tea and an ample supply of dry clothing.

During this gale the "Royal Charter" was lost, but the "Oncen" happily rode it out unscathed.

#### NOTES.

CRAP. VIII. p. 281.—Colonel MacDongall, in 'Modern Warfare as influenced by Modern Artillery' (London, 1864), speaks thus of the service rendered to the Federals by a balloon, in the passage of the Rappahannock, by General Hooker, April, 1863:—

. . . . In another quarter during this day, General Sedgwick having ascertained, by means of a balloon ascent, that a very small force of Confederates and but few guns remained in his front in the Fredericksburg position, attacked and carried the height.

Chap. IX. p. 299,—Lord Stanhope, in his 'Life of William Pitt,' gives the following correspondence between Earl Stanhope and the Lords of the Admiralty on Steam Navigation:—

In 1705, as in the preceding year, there were some experiment in Stam Navigation set on for by Earts, Standapor, and sanctioned by the Lords of the Admirally. It had indeed them to construct a ship in the Param, and had signed a bood, dated June 50, 1794, with a penalty to himself of 19000, "to indemnify the public nose the soil ship belowable an asswer the purpose of Government." The subject must be result to be a critical ones, to be the subject of the purpose of Government. The subject must be result to be a critical one, set tending to throw some light on the first steps of a gipantic change in the British may; and the erigin of the where is summed up to follow in a letter which Eal's Stambup soldered to the Lords of the Admirals of the Standard Standard

"My Lonra, "Chewaing, Dec. 22, 1705.

which I here select and subjoin took place, as will be seen, near the close of that further term.

"Your lookships no doubt as all of you informed that no Anis' Nanjawa ship Called the Nearl') has been constructed by Germanne for the purpose of exercising the effective of the injectival has, invented by no, of no neighbor, although the policy of the injectival has, invented by no, of nanis in the year 1970. If, gave a lood to 18 Myleyy relative to that ship and plan. The stranscenged apparatus constructed nodes my direction, and intended for moving that would, is now on bornd her in Gerenhand Dode. For several manular part I have been analized glassed expensions in the ship or various parts of the apparatus. For I do not intend to content myself with nearby generations in the ship of continual parts of experiments in Called the Anison of the Called Science of the Anison of the Anison of the Called Science of the Anison of the Anison of the Called Science of the Anison of the Anison

"The subject being a now one, the weetmen have had everything to learn, and it has taken more time to complete the work than sus at first expected. The time mentioned in my bond to be allowed for the making of the experiments is nearly expired. Harefore request your Lordships to add a few more months (such as eight, ten, or twelve), for that purpose, as I take for granted that your Lordships would not deen it either proper or expedient to stop experiments of one homosequence in their progress, and at the west of their concellation.

" I have the honour to be, &c.,
"STANHOPE."

In reply, on the part of the Board of Admiralty (Dec. 28, 1795), the Secretary, Mr. Evan Nepsan, in a liberal spirit, granted the longest period of extension that had been suggested, namely, twelve months. The correspondence

EARL SPENCER TO EARL STANBOPS.

MY Loss. "Administy, Nov. 5, 1796." "The delay which I alluded to in my former letter arose from some doubt whether the experiment which has already been made was sufficient to ascertain the properties of the 'Kent.' In order, therefore, to remove any

arreacy teen mose was structure to ascertain the properties of the 'Acut. In over, uncertors, to remove any doubt agen that subject, the Board of Admirably have determined on trying another experiment for that express purpose; for which (if your Lordship has no objection to it) directions will be inmediately given.

"I have the homour Ac.

" Spencer,"

" My Loud, Loudon, Nov. 8, 1796,

"The 'Kent' is at present (whatever it may be hereafter) a Government vessel. The Board of Admiralty therefore have a right, and will do 'right, to make with her such experiments as they shall deem proper. My consent is not necessary, nor should I refuse it fit were.

"Two things no doubt your Loubship will think it expedient to do. First, that the necessary directions may be immediately given for making those experiments respecting which I shall not interfere. Secondly, that they may be made within a short space of inc, insumach as your Lordship must be enable that whilst the vessel is out, no adjustment can be made in the steam apparatus, in order to make the intended experiments with steam.

"That subset in of for more innorance than the Board of Admiralty seems to be wareed."

"I have the honour, dec., "Srannore."

EAST SPENCER TO EAST STANSOPE.

"Mr Loss.

"Athindip, My IT, 1997.

"Athindip, My IT, 1997.

"Almindip, My IT, 1997.

"Almindip,

"You may depend agen my not feeling the most distant intention of trifling with you on this or any other subject, though for testingly an any tense are measure to alter the opinion. I have already expressed, that the model you have imagined of naving abips, independent of wind and tide, will not be found to answer the very great expectations rough Lordship appears to have formed of the subject to the control of the control

" I have the honour, &c.,

\* Spences."

The experiments made by the "Neal" were satisfactory to Lord Standage; not so to the Neary board. In the whole the Earth of the Almirally described the scientific and post-scientific sections of the Almirally described the size of the Neary Board properties of Lord Standage the postal supplicability in the Near Test to be the Near Test of the Near Test of Near Test



PRINTERS AND HELLE.

11.



many things with it from place to place.

### THE ATMOSPHERE.

The few remarks that I will here add on the subject of the Atmosphere, are taken from the Poloc of Knowledge, "published at Glaggor, thowing the pepular ideas with regard to the wind, &c., in the year 1750; from the 'listery of the Instillectual Development of Europe,' by Prefessor John William Draper, of the University of New York; and from the wild-known and very beautfull work of Cypins Maury, on the 'Physical Geography of the Sea, and in Meteorology,' a look that cannot too frequently be recommended to all lowers of Nature.

THE BOOK OF KNOWLEDGE, 1750.

107....2

Wind is said to be an exhibition but and dry, engendered in the borest of the earth; and leving gatten out, is carried vibelong upon the face of the earth, and cannot meant upourds above the middle region of the six which, by reason of its coldness, doth best it back; so as by much strift, and by meeting other exhabitions rising its notion is forced to be rather round, then right in its falling; and this makes it a whirt-post or whitevish, which ofectations by its videous conricted

Earthquaker,

The ancients affirm that the cause of earthquakes is plenty of wind gotten and confined within the bowels of the earth, which is striving to break forth.

#### Thurder and Lightwing.

Thusler and lightning is consistend by an exhabiton but and day, and being carried up into the middle region of the air, and there entoled into the body of a cloud. Now these two contracticle being thus abut or enclosed into one place together, they fall at variance, whereby the water and fire agree not till they have broken through, so that fire and water fly out of the clouds, the breaking whereof makes that noise which we call thunder, and the firm is inferring.

Draper says:-

The intellectual state of the Mohammedan nations at this epoch is shown by the fragments of the works of their scientific writers that have descended to us.

Angue, the three data of the property of the property of the property of the product of the finguins and Egypt, but the datable of the biggingly are very confision. Thereoff, the option where, which have been translated a few parts of the product of the product

.... With extraordinary acuteness, he applies the principles with which he is dealing to the determination of the height of the atmosphere, deciding that its limit is nearly fifty-eight and a half miles.

All this is very grand. Shall we compare it with the contemperaneous monk minches and mankind philosophy of Empere? It would make a profound impression if communicated for the first time to a scientific Society in our own age. Nor, perhaps, does his merit end hore. If the 'Book of the Balance of Winken,' for a translation of which we are inducted on M. Kahandi, the Basahun Canni-General and Tarkiri, he the production of Albance, of which there seems to be internal proof, it offers us evidence of a singular cleames in mechanical encoperion for which we also allocatedly have been preparely, and, if it he not his, at all events it indispatably shows the scientific acquirements of his age. In that book is plabilly set forth that consension between the weight of the atmosphere and its investing domain; The weight of the atmosphere consension between the weight of the atmosphere and its investing domain; The weight of the atmosphere was therefore understood before Torricelli. He shows that a body will weigh differently in a rare and in a dense atmosphere; that its less of weight will be greater in proportion as the air is more dense. He considers the force with which plunged bodies will rise through heavier media in which they are immersed, and discusses the submergence of floating bodies, as ships upon the sea.

The determination of the density of holies, as given by Albarea, appears very closely to our cours in the case of necessity they are even now exact than some of these of the later cutury. 1, bins, advantage in animal plathosphers will do, in the pions payer of Albarea, that, in the bay of Judgmant, the Albarea of Albarea, that is the pion a payer of this pion a power of the pion 4 but 4 b

From observation on the trillight, the closticity of serial belies, and the condensing action of cell, the Long, conclusion previously arrived at by Alman was collabole, that the amongsher due not extent of the condensity of the page. In beight is considered to be about for yield units, Prom its congressibility, the greater part of it is within a much analytic limit, were it of uniform durally, we show the evident most belief, in thickness me the eighthein part of the distance to the curbat courter, and its insensivir allegeller as illimits. It been show the same properties in the curbat that the own page a post here are to be post itself.

A foundation for the mechanical theory of the atmosphere was half as soon as just ideas respecting liquid pressures, as formedy taught by Archimedes, were restored, the conditions of vertical and obligate pressinvestigated, the demonstration of equality of greeners in all directions given, and the proof furnished that the force of a liquid on the bottom of a vecsel may be very made greater than its weight.

Such of these contains as were applicable were soot transferred to the case of availables. The weight branch, of the attemptive was demonstrated, its pressure illustrated and unsampt, then can be designed about not state. In a such a such as the action of pumps, and the overtheev of the Artistedian Bestrine of the braners of a vectors not. Coincidently overared the investment of the braners, and the proof of its true theory, both on a steeple in Tayla and on a nomation in Averagne. The invention of the air pump, and its brantfull illustrations of the preperties of the attrasphere, excluded in a singular measure the toda for notarial billowers.

percent we development out of the second of

The apparts determination of that problem, so fir as a few thousand years were conversed, was recognized.

The same followed by a recognized of the integration of animals and pleats, and their manually balancing and search and pleats, and their manually balancing and search of the state of the second please. of miles delimine, From this it appeared that it is not by inconsent intervenions that the sum study of animal file is adjusted to that of vapitable, but that in this respect the system of government of the varieties of the operation of animal consens and have, ancedsome the non-imposing sizes of interministical altings things, much includes even man himself. This detail of these investigations proved that the organic substance of plants is now in the size route in plants, to be in animals, now in the size route in the plants for normator being in the sum, from whom he come the few incorporated in plant the more therein plants of provinces are the size of the plant of more more being in the sum, from whom he come the few incorporated in plant times, and eventually discapped in our fires, shaining in our firms, shaining in our f

Organic distributions by respiration and the growth of plants boding in the lowest stratum of the salt, in Ex-main, unfillenting of composition would be impossible were in tent from gauge of the winds and the difficult movement of games, which it was found would lake place under any pressure. The winds were at length properly found to the contract of the sarth. As a here provide followed the explanation of monomous in the alternate beating and resing of the sarth. As a here properly and of terms down the red lake of all realizer contact as good of a size and fortion of the contract of the sarth. As a here provide said with an afternation of the sarth of the contract of the sarth. As a here provide said with a said of translates, which are allowed all realizer rounds at models as with a distinctor of one length of one handred and fifty makes, the acts nowing in a cerviligate track with recomb length of the said of the contract of the models to depth on proposite direction to the contract of the models to depth on proposite direction to the contract of the models to depth on proposite direction to the contract of the models to depth of the public terms of the saids of the contract of the models to depth on proposite direction to the contract of the models to depth of the public terms of the models to depth of the public terms of the models to depth of the public terms of the models to the proposite direction to the contract of the models to depth of the public terms of the models to depth of the models to the internal terms of the models and the proposite direction to the models to depth of the models and the proposite direction to the contract of the models and the proposite direction to the contract of the models and the proposite direction to the contract of the models and the proposite direction to the contract of the co

The equatorial calms and trade-winds accounted for on physical principles, it was admitted that the winds of high latitudes, provorbially uncertain as they are, depend in like manner on definite causes.

With these pulpable movements there are others of a less obvious kind. Through the air, and by reason of motions in it, sounds are transmitted to us.

The Alexandrian mathematicians made sound a favourite study. Modern acoustics arose from the recognition that there is nothing issuing from the sounding body, but that its parts are vibrating and affecting the medium between it and the ear. Not only by the air-pump, but also by observations in the rarerelocity. atmosphere of the upper regions, it was shown that the intensity of sound depends upon the density. On the top of a mountain the report of a pistol is no louder than that of a cracker in the valley. As to the gradual propagation of sounds, it was impossible to observe fire-arms discharged at a distance without noticing that the flash appears longer before the report in proportion as the distance is greater. The Florentine academicians attempted a determination of the velocity, and found it to be 1148 feet in a second. More accurate and recent experiments made it 1689-42 feet at the freezing-point of water; but the velocity, though independent of the density, increases with the temperature at the rate of 1-14 foot for each degree. For other media the rate is different; for water, about 4687 feet in a second, and in cost-iron about ten-and a half times greater than in air. All sounds irrespective of their note or intensity, move at the same velocity, the medium itself being motionless in the mass. No seniel can pass through a vacuum. The sudden aerial condensation attending the propagation of a sound gives rise to a momentary evolution of heat, which increases the elasticity of the air, and hence the velocity is higher than 916 feet in a second, otherwise the theoretical rate.

M. Arthur Mangin, in his beautiful work cutitled 'L'Air et le Monde Aërien' (Tours, 1865), so well tells the story of the discovery of atmospheric pressure, that I could not desire it in better words:—

The year 1620 will always be memorable for one of those discoveries that begin a new speck in science. Till that year to one believed that the air had weight, that it exercised, like water, a pressure you all belies immersed in proportion to their beight and surface. Archimedes, the father of hydrostatics, was ignorant that the laws of water could also be applied to the siz.

In the seventeenth century, however, many effects of the atmospheric pressure were known, and were applied in the censtruction of pumps, ornamental fountains, dor. But instead of attributing this to its true cause, it was explained by the accionst aphorism: "Jahras abbored a neuro," an aphorism that Nature, strange enough, had never desired, because no attempt appears to have been made to force water by this means to a height exceeding thirty-two or thirty-there feet.

The Grand Dube of Florecce, in 160h, Bod this analytims and principy fancy. Engineers received orders to suke pumps in the patice for raising the waters to the upper chamber, that is to a leight which anymousd by a precoding phytonide experiments. The engineers, however, et to work, not doubling that becomes III Hillightess the Grand Dube which the water to search, it would be seen to do so. With all now the stempt was made; if a somework well so far, and the water awanded lattly two fact; the pumping was continued, but the obstitute water would not the indigent. Exertions were insecured, but it was, if rappe were constantly not a fault, now the would not the indigent. Exertion were insecured, but it was, if rappe were constantly not a fault, now the world not in the part of the same of the second form of the rapper of the same of Phenone canceld beloft. For the first time between

If we referred to the Grand Duke. He could see but one man in all Indy, and in all Empry, who was expalsed of explaining on tranges an overtime of fundamental pleniples; this was Gollike. Galillot, taken massware, could only solve the problem crussocally. It was the weight, he mid, of the water that prevented the played from ringing lights. He should have said that this was but a lance explanating but it was recovery for hint to any something; if was not possible for him to keep allows in a question of Natural Science. The Grand Duke and the Parentin engines were concent with this reply.

There was at Boses at that time a young profound of the Natural Sciences (twotty-lives years of age), mastel Fanagolista Terricelli. But was more the unition of Caselli, a page off deallies. Novelitabeting the resonation for fits for the great sum who was the master of the nonter, Turricell though the explanation given by takible in the profit of the



· Adas supports the Heavens on his shoulders .

asked Toricilli, something analogous to what is observed in the balance by one body poining another? Then the thought of the six fregarts because means, which, keing a naterial substance, made, like all others, have the and careries pressure on all bolds on the surface of the globs. "From this cause one might suppose that wave in the pump would cause to rise, when it was in quillimition with the external pressure of the structure, and that this pintal was about thirty-two feet, at the sex-level." This was best a step that genius above our make, and gives to the decoverer as much that will but with all time.

Nevertheless, to make so novel a presumption certain, so opposed to the ideas of the day, Torricelli warrequired to verify it by a decisive experiment. If correct, the height of a column of liquid to balance the atmospheric pressure should be in invene proportion to the density of the liquid. Thus quicknilver, being fourtee-

times howler than water, aboult only rise to about twesty-eight inches.

Passing from reasoning to experiment. Torricall took at the of thirty inches, closed at one extremity, filled it with nerveny, put his flager on the orifice, turned the tube over in a basin containing mercury, and, then withdrawing his flager, bent the tube in a vertical toolition.

He washed the mercup descend till it reached a point where it remained stationary, leaving a versum above it. The height of the satellic coloma was found to be about text-up-eight inches. With each a result they pomp natural philosopher must have been a great matter of himself mot to have run out from his kindwordy himself and the property of the state of the state of the height of the himself and have from its produced in the benned would the greatest catestomer. The partiesnes of the himself was nature "nature" attacked them with first, while the now party, whom we may call "the Defenders of the Vernum" were and missincity. Describe was the chiral point in the product of the product of

The difference at the Puy-de-Dôme was three inches, and at St. Jacques' tower two-and-a-half lines, being in exact proportion to their heights, as the Puy-de-Dôme is one thousand metres and St. Jacques' tower is fitty metres.

This proof was therefore decisive.

### THE WINDS.

Ye winds, yu unseen currents of the air, Softhy yo played a few brief hours app; Ye bow the normatrieg bee; ye tosaed the hair O'er maiden checks, that took a freezier glow. Ye relied the round white cloud through depths of blue; Ye shock from shaded flowers the ingering dew; Boire you the catalpa's bloscens flow, Light blowman, dropping on the grans like snow.

How are ye changed I Ve take the catamet's wound; Ye take the whitpool's fury and its neight; The monation abodiers are yes every the ground; The valley woods the proce beneath your flight. The citodic before you shoot libs ungles peas; The homes of men are socking in your blust; Ye ifit the roofs like autumn leaves, and cast, Stywand, the shaling framents out of slight. The wary feels of heaven make wing in vain,
To escape your worth; ye seize and dash them dead,
Against the earth ye drive the roaring rain;
The harvest-field because a river's teel;
And torreces tumble from the hills around,
Plains turn to liskes, and villages are drowned,

Plants turn to have, and virings are crowned, And waiting voices, midst the tempest's sound, Rise, as the roshing waters swell and spread, ev.

Ye dark upon the deep, and straight is heard.

A wilder roar, and men grow pole, and peny; Ye fling to flooks around you, as a bird. Flings of his sharcing planners the fountain's spray See? to the breaking must the sailor clings; Ye scorp the occurs to its briny aprilege, And take the mountain billow on your wings.

And pile the wreck of navies round the bay.

BRYANT.

Maury, in his 'Physical Geography of the Sea, and its Meteorology,' makes, among other observations, these remarks concerning the atmosphere:—

1. Our planet is invested with two great cosms: one visible, the other invisible; one is underfoot, the other received or overhead; one entirely exvelops it, the other covers about two-thirds of its surface. All the water of the outwork one weights about 400 times as much as all the air of the other.

- 4. The air is clarite, and very milkle water. That at the lettern is proved down by the experiments at a water of the contract of the contr
- A. More than three-fearnts of the entire atmosphere is below the level of the highest mountains; the other fearth is rarefied and expended in consequence of the diminished pressure, until the height of many fearnts in the lattimed. From the reflection of the sun's rays after he has set, or before he rises above the herizon, it is calculated that this upper fourth part must extend at least forty or forty-five miles level.
- 6. At the beight of 25,000 miles from the earth, the centringal force would continuent gravity; consequently, being.
  11 possible all productions market that the central carries with it in the darmal eventation must be within that gravity reduced, for Sr John Brendt Harshell has above, by balloon observations. That at the beight of 80 or 90 miles rise as warmer from even compacted and any which we can produce by any simple. In 1783 a large action, compacted to be half a mile in dissector and diffy miles from the earth was boost to explode. As sound contained the contribution of the contribu
- 8. Chemists who have mode the analysis, ball as that, out of 100 perts of atmospheric air, 90-3 consist of harpon or oxygen and nitneyen, mixed in the proportion of 21 of oxygen to 79 of nitneyen by volume, and of 22 to as the contract of the contrac
- 18. With the baremeter at 30 im, and the thermometer at 32°, the weight of a cubic foot of dry atmospheric volume. air is 1:291 oz., and its specific gravity "00120. Such is the difference in weight between the two elements, the phenomena of which give the physical geography of the sex its charms.
- "The weight of the stroughers is equal to that of a solid gible of load sixty rails in diameter. In the property of the strong principal colorant are oxygen and antienges more with a vest quantity of water supersided in them in such present the strong principal colorant are oxygen and antienges more with a vest quantity of water supersided in them in the contract of the strong and the strong a
- 28. "These facts are for and simple enough; let us no what results arise from them; A actio constant relatives: opposed of the equilated in quies of the cutto the ion and net concently there capeabre a vest amount of the end of boot, and as has been from the polar region must in like usance promote as infinite secondarion between the contract of th
  - \* Those of Mr. Welsh, in his ascent from Kew.
  - † Maury a 'Sailing Directions,' vol. i. Sir John Herschel quotes it at 14075 for 62".

toward the key regions, and, there becoming cold by contact with the ice, they carry back their gelid freight to refresh the torrid zone.

38. "We have already said that the atmosphere forms a spherical shell, surrounding the earth to a depth Powers of which is unknown to us, by reason of its growing tenuity, as it is released from the pressure of its own superincumbent mass. Its upper surface cannot be morer to us than fifty, and can scarcely be more remote than five hendred miles. It surrounds us on all sides, yet we see it not; it presses on us with a lead of fifteen pounds on every square inch of surface of our bodies, or from seventy to one hundred tons on as in all, yet we do not so much as feel its weight. Softer than the finest down, more impalpable than the finest gasanner, it leaves the cobweb undisturbed, and scarcely stirs the lightest flower that feeds on the dew it supplies; yet it bears the fleets of nations on its wings around the world, and crushes the most refractory substances with its weight. When in motion, its force is sufficient to level with the earth the most stately forests and stable buildings, to raise the waters of the ocean into ridges like mountains, and dash the strongest ships to pieces like toys. It warms and cools by turns the earth and the living creatures that inhabit it. It draws up vapours from the sea and land, retains them dissolved in itself or suspended in eisterns of clouds, and throws them down again, as min or dew, when they are required. It bends the rays of the sun from their path to give us the anrora of the morning and twilight of evening; it disperses and refracts their various tints to beautify the approach and the retreat of the orb of day. But for the atmosphere, sunshine would burst on us in a moment and fail us in the twinkling of an eye, removing us in an instant from midnight darkness to the blaze of noon. We should have no twilight to soften and beautify the landscape, no clouds to shade us from the scorching heat; but the buld carth, as it revolved on its axis, would turn its tanned and weakened front to the full and unmitigated rave of the lord of day.

28. "The stroughers offerfor the gas which virides and warms our frames; it received just itself that which later has been pollined by use and it sheers of as noises. It finds the flame if it lies entirely at it does that from it lies entirely at it does the form if it lies entirely at the control of the flame is of the flame. It is also does not consider that the flame of the flame is of the flame in the flame of the flame in the flame of the flame is of the flame in the flame of the flame in the flame of the flame is the flame of the flame in the flame of the flame in the flame of the flame is the flame in the flame of the flame in the flame in

again into the ever-present air."

200. There is no employment more ennobling to man and his intellect than to trace the evidences of design

Libered to and purpose, which are visible in many parts of the creation. Hence, to the right-minded mariner, and a machine, to him who studies the physical relations of earth, sea, and air, the atmosphere is something more than a shoreless ocean, at the bottom of which he creens along. It is an envelope or covering for the distribution of light and heat over the surface of the earth; it is a sewer into which, with every hreath we draw, we cast vast quantities of dead animal matter; it is a laboratory for purification, in which that matter is recompounded, and wrought again into wholesome and healthful shapes; it is a machine for pumping up all the rivers from the sea, and for conveying the water (\$ 191) from the ocean to their sources in the mountains; it is an inexhaustible magazine, marvellously stored. Upon the proper working of this machine depends the well-being of every plant and animal that inhabits the earth. How interesting, then, ought not the study of it to be! An examination of the uses which plants and animals make of the air is sufficient to satisfy any reasoning mind in the conviction that when they were created, the necessity of this adaptation was taken into account. The councilon between any two parts of an artificial machine that work into each other, does not render design in its construction more patent than is the fact that the great atmospherical machine of our planet was constructed by an Architect who designed it for certain purposes; therefore the management of it, its movements, and the performance of its offices, cannot be left to chance. They are, we may rely upon it, guided by laws that make all parts, functions, and movements of this machinery as obedient to order and as harmonious as are the planets in their orbits.

The size of observant inm that the laws which govern the temporary and the laws which govern the content of the

g mito is.

should there be a perpetual drought in one part of the world, and continual showers in another? Or why should the conscious winds ever head the voice of rebuke, or the glad waves ever "clap their hands with joy"?

29.7. To one who look admost be contemplet the agent of Nature, so he see them at work type our planet, between no expression thread one at preferred by them is within tousing. By such as one, the wind and in the same of the export and the cloud, the bids, the current, the sulmess, and depth, and warmt, and other of the same of certain physical combinations, and therefore so the expression in which Nature choose to anomeone her own designs, or, if we place, as the language in which the service down or elects to make become her own to same of the same o

203. There have been examined at the Washington Observatory more than a million of observations on the Marshink for and direction of the winds at new. The discussion of such a mass of material has thrown much in the light upon the circulation of the atmosphere; for, as in the ocean (§ 201), so in the air, there is a regular above. seven or circulation.



"Blow, West, and chack form cheeks! Base! Blow!"

King Low, Jet III, note 2

Perhaps Low Order neight be more correct in this worslent.

<sup>\*</sup> Nantical Monograph, No. 1, 1859.

### DIAGRAM ILLUSTRATING

# THE CIRCULATION OF THE WINDS ROUND THE GLOBE.



Leaden: Jenses Beynok's, 174, Strand

229. Let us imagine the air to be visible, that we could see these different strata of winds, and the air as it is Supposing the sloughed off from one stratum to join the other. We can only liken the spectacle that would be presented between the upper and the lower stratum of these winds to the combing of a succession of long waves as they come rolling in from the sea, and breaking one after another, upon the beach. They seated between curl over and are caught up, leaving foam from their white caps behind, but nevertheless stirring lower curvats. up the sea and mixing up its waters so as to keep them all alike

230. If the ordinances of Nature require a constant circulation and continual mixing up of the water in the The reserve see, that it become not starmant, and that it may be kept in a wholesome state for its inhabitants, and atom subserve properly the various offices required of it in the terrestrial comony, how much more innerative elements. must they not be with the air? It is more liable to corruption than water; stagnation is ruinous to it. It is both the sewer and the laboratory for the whole animal and vegetable kingdoms. Conscless motion has been given to it; perpetual circulation and intermingling of its ingredients are required of it. Personal experience teaches us this, as is manifest in the recognised necessity of ventilation in our buildings-the wholesome influences of fresh air, and the noxious qualities of "an atmosphere that has no circulation." Hence, continual mixing up of particles in the atmosphere being required of the winds in their circuits, is it possible for the human mind to conceive of the appointment of "circuits" for them (§ 216) which are so admirably designed and exquisitely adapted to the purpose as are those which this view suggests?

234. By the motion of the clouds upper currents of wind are discerned in the sky. They are arranged in The very layers or strota one above the other. The clouds of each stratum are carried by its winds in a direction and with a velocity peculiar to their stratum. How many of these superimposed currents of wind there and with a velocity pecuation of the atmosphere we know not. As high np as the cloud-region may be between the top and bottom of the atmosphere we know not. As high np as the cloud-region several are often seen at the same time. They are pinions and rachets in the atmospherical machinery. We have seen (§ 230) some of their uses: let us examine them more in detail. Now, as the tendency of air in motion is (\$ 120) to move in arcs of great circles, and as all great circles that can be drawn about the earth must cross each other in two points, it is evident that the particles of the atmosphere which are borne along as wind must have their paths all in diverging or converging lines, and that consequently each wind must either be, like the trade-winds (§ 222), drawing down and sucking in air from above, or, like the counter trades (§ 226), crowding out

and foreing it off into the upper currents.

236. Thus the laws of motion, the force of gravity, and the figure of the earth, all units in requiring every The results wind that hlows either to force air up from the surface into the regions above, or to draw it down to the earth from the crystal vaults of the upper sky. Add to those the storm-king :-- traversing the air, he ercustors thrusts in the whirlwind or sends forth the cyclone, the tornsdo, and the hurricane to stir up and agitate, to mix and mingle the whole in one homogeneous mass. By this perpetual stirring up, this continual agitation, motion, mixing, and circulation, the airy covering of the globe is kept in that state which the wellbeing of the organic world requires. Every breath we draw, every fire we kindle, every blade of grass that grows or decays, every blaze that shines and hurns adds something that is nexious or takes something that is healthful away from the surrounding air. Diligent, therefore, in their offices must the agents be which have been appointed to maintain the chemical status of the atmosphere, to preserve its proportions, to adjust its ingredients, and to keep them in that state of admixture best calculated to fit it for its purposes.

237. Several years ago the French Academy sent out bottles and caused specimens of sir from various parts of the world to be collected and brought home to be analysed. The nicest tests which the most skilful nears by the French chemists could apply were incapable of detecting any, the slightest, difference as to ingredients in the Asserty. specimens from either side of the equator; so thorough in the performance of their office are these agents. Nevertheless, there are a great many more demands on the atmosphere by the organic world for publics in one hemisphere than in the other; and consequently a great many more inequalities for these agents to restore in one than in the other. Of the two, the land of our hemisphere most teems with life, and here the atmosphere is most taxed. Here the hearthstone of the human family has been laid. Here, with our fires in winter and our crops in summer, with our workshops, steam-engines, and fiery furnaces going night and day-with the ceaseless and almost limitless demands which the animal and vegetable kingdoms are making upon the air overhead, we cannot detect the elightest difference between atmospherical ingredients in different hemispheres; and yet, notwithstanding the compensations and adjustments between the two kingdoms of the organic world, there are almost in every neighbourhood causes at work which would produce a difference were it not for these ascending and descending columns of air-were it not for the obedient winds-for this benign system of circulation-these little cogs and rachets which have been provided for its perfect working. The study of its muchanism is good and wholesome in its influences, and the contemplation of it well calculated to excite in the bosom of right-minded philosophers the deepest and best of emotions.



238. Upon the proper adjustments of the dynamical forces which keep up these ceaseless movements the life How say of organic nature depends. If the air that is breathed were not taken away and renewed, warm-blooded pass of life would cease; if carbon, and exygen, and hydrogen, and water were not in due quantities dispensed by the restless air to the flora of the earth, all vegetation would perish for lack of food. That our planet down from may be liable to no such calamity, power has been given to the wayward wind, as it "bloweth where it the upper sky. listeth," to bring down from the pure bine sky fresh supplies of life-giving air wherever it is wanted, and to catch up from the earth wherever it may be found, that which has become stale - to force it up, there to be deflagrated among the clouds, parified and renovated by processes known only to Him whose ministers they are. The slightest change in the purity of the atmosphere, though it may be too slight for recognition by chemical analysis in the laboratory, is sure to be detected by its effects upon the nicer chemistry of the human system, for it is known to be productive of disease and death. Ne chemical tests are sensitive enough to tell us what those changes are, but experience has taught us the necessity of ventilation in our buildings, of circulation through our groves. The cry in cities for fresh air from the mountains or the soa, reminds us continually of the life-giving virtues of circulation. Experience teaches that all air when pent up and deprived of circulation becomes impure and poisonous

239. How minnte, then, pervading, and general, benignant, sure, and perfect must be that system of Bestiful circulation which invests the atmosphere and makes "the whole world kin"! In the system of vertical circulation which I have been endoavouring to describe, we see, as in a figure, the lither sky filled with orangecrystal vessels full of life-giving air continually ascending and descending between the bottom and the top of the atmospherical occan; these buckets are let down by invisible hands from above, and, as they are taken up again, they carry off from the surface, to be purified in the laboratory of the skies, phisis of mephitic vapours

and noxious gases, with the dank and deadly air of marshes, pends, and rivers.

240. Whenever, by study and research, we succeed in gaining an insight, though never so dim, into any one There will no of the effices for which any particular part of the physical machinery of our planet was designed by the so upon Great Architect, the mind is enriched with the conviction that it has comprehended a thought that was the nint. entertained at the creation. For this reason the beautiful compensations which philosophers have discovered in terrestrial arrangements are sources of never-failing wonder and delicht. How often have we been called on to admire the benirm provision by which fresh water is so constituted that it expands from a certain temperature down to freezing! We recognise in the formation of ice on the top instead of at the bottom of freezing water, an arrangement which subserves, in manifold ways, wise and beneficent purposes. So, too, when we discern in the useer sky (\$ 234) currents of wind arranged in strata one above the other, and running hither and thither in different directions, may we not say that we can here recomise also at least one of the fore ordained offices of these upper winds? That by sending down fresh air and taking up foul, they assist in maintaining the world in that state in which it was made and for which it is designed-a habitation fit for man "?

248. . . . . Thus we infer the existence in the upper air of reservoirs for the heat as well as of in the sky. chambers for the cold.

251. We now see the content course of the "wind in his circuits," as we see the central course of the water The wind in in a river. There are many abraiding surfaces, irregularities, &c., which produce a thousand eddies in in except, the main stream; yet, nevertheless, the general direction of the whole is not disturbed nor affected by those counter-currents; so with the atmosphere and the variable winds which we find here in this latitude. Have I not, therefore, very good grounds for the opinion (§ 200) that the "wind in his circuits," though apparently to us never so wayward, is as obedient to law and as subservient to order as were the morning stars when first they " sang together "?

259, Let us consider this influence. A cubic foot of water, being converted into vapour, occupies the space Young as of 1800 cubic feet.\* This vapour is also lighter than the t800 cubic feet of air which it displaces. Thus, ose of the if the displaced air weigh 1000 ounces, the vapour will weigh 623; consequently, when air is surcharged with vapour, the atmosphere is bulged out above, and the barometric pressure is diminished in proportion to the volume which flows off above in consequence of this bulging out. Thus, if we imagine the air over the Atlantic Ocean to be all in a state of rest, and that sublonly during this calm, columns of vapour were to commence rising from the middle of this ocean, we can understand how the wind would commence to flow into this central space from all around. Now, if we imagine to other disturbing cause to arise, but suppose the evaporation from this central area to go on with ceaseless activity, we can see that there would be a system of winds in the Atlantic as steady, but perhaps not so strong as the trades, yet owing their existence, nevertheless, merely to the formation of aqueous vapour. But this is not all.

260. "During the conversion of solids into liquids, or of liquids into vapours, heat is absorbed, which is again

<sup>\*</sup> Black and Watt's Experiments on Heat.

given out on their recondensation." In the process of converting one measure of water into vapour, heat Nach's law. enough is absorbed-i.e., rendered latent, without raising the temperature of the vapour in the least-to raise the temperature of 1000 such measures of water 1°; when this vapour is condensed again into water, wherever the place of recondensation may be, this heat is set free again. If it be still further condensed, as into hall or snow, the latent heat rendered sensible during the process of congolation would be sufficient to raise the temperature of 140 additional measures of water 1°.

261. In this heat rendered latent by the processes of evaporation, and transported hither and thither by the The latest winds, resides the chief source of the dynamical power which gives them motion. In some aspects vapour is to the winds what facil is to the steam-engine: they carry it to the equatorial calm belt; there it rises, entangling the air, and carrying it up along with it as it goes. As it ascends it expands; as it expands it grows cool; and as it does this its vapour is condensed, the latent heat of which is thus liberated; this raises the temperature of the upper air, causing it to be rarefied and to ascend still higher. This increased rarefaction calls for increased velocity on the part of the inpouring trade winds below.

262. Thus the vapours uniting with the direct solar ray would, were there no counteracting influences, cause The effect the north-east and south-east trade-winds to rush in with equal force. But there is on the rolar side of of the doupon, also an area of immense precipitation. These two sources of heat hold back the north-east tradewinds, as it were, and, when the two are united, as they are in India, they are sufficient not only to hold back the north-east trade-wind, but to reverse it, causing the south-west monsoon to blow for half the year instead of the nerth-east trade.

268. We now begin to conceive what a powerful machine the atmosphere must be; and, though it is Powerful apparently so capricious and wayward in its movements, here is evidence of order and arrangement machinery. which we must admit, and proof which we cannot deny, that it performs this mighty office with regularity and certainty, and is therefore as obedient to a law as is the steam-engine to the will of its builder. It, too, is an engine. The South Seas themselves, in all their vast intertropical extent, are the boiler for it, and the northern hemisphere is its condenser (§ 24). The mechanical power exerted by the air and the sun is lifting water from the earth, in transporting it from one place to another, and in letting it down again, is inconceivably great. The utilitarian who compares the water-power that the Falls of Nisgara would afford if applied to machinery, is astonished at the number of figures which are required to express its equivalent in horse-power. Yet what is the horse-power of the Nisgara, falling a few steps, in comparison with the horse-power that is required to lift up as high as the clouds and let down again all the water that is discharged into the sea, not only by this river, but by all the other rivers and all the rain in the world? The calculation has been made by engineers, and, according to it, the force for making and lifting vapour from each area of one acro that is included on the surface of the earth is equal to the power of thirty horses.

345. Where shall those who are disposed to search, look for this other agent that is supposed to be concerned Faralay's with the trade-winds in their easting? I cannot say where it is to be found, but considering the recent discoveries in terrestrial magnetism—considering the close relations between many of its phenomena and is the sir. those both of heat and electricity-the question may be asked whether some power capable of guiding "the wind in his circuits" may not lurk there? Oxygen comprises more than one-fifth part (two-ninths) of the atmosphere, and Faraday has discovered that oxygen is para-magnetic. If a bar of iron be suspended between the poles of a magnet, it will arrange itself axially, and point towards them; but if, instead of iron, a bar of bismuth be used, it will arrange itself equatorially, and point in a direction perpendicular to that in which the iron pointed. To distinguish these two kinds of forces, Dr. Faraday has said iron is para-magnetic, bismuth dia-magnetic. Oxygen and iron belong to the same class, and all substances in nature belong to one or the other of the two classes of which iron and bismuth are the types.

346. This eminent philosopher has also shown that if you place a magnetised bar of iron on a smooth surface, and sift fine iron-filings down upon it, these filings will arrange themselves in curved lines; or, if the bar Lines of be broken, they will arrange themselves. The earth itself, or the atmospheric envelope by which it is surrounded, is a most powerful magnet, and the lines of force which proceed whether from its interior, its selid shell, or vaporous covering, are held to be just such lines as those are which surround artificial magnets: proceed whence they may, they are supposed to extend through the atmosphere, and to reach even to the planetary spaces. Many eminent men and profound thinkers, Sir David Brewster among them, suspect that the atmosphere itself is the scat of terrestrial magnetism. All admit that many of those agents, both thermal and electrical,

<sup>\*</sup> Black's law. It is an important one, and should be remembered.

which play highly important parts in the meteorology of our planet, exercised a marked influence upon the magnetic modifies of the atmosphere also.

347. Now, when, referring to Dr. Faraday's discovery (§ 345), and the magnetic lines of force as shown by the iron-filings (§ 346), we compare the particles of oxygen gas to these minute bits of ferroginous istic refle-ence of the dust that arrange themselves in lines and curves about magnets;—when we reflect that this great magnet, the earth, is surrounded by a para-magnetic gas, to the molecules of which the finest atom from the file the six and is in comparison gross and ponderous matter; that the entire mass of this sir is equivalent to a sea of on the sun more any covering the earth around and over to the depth of thirty inches, and that this very subtile mass is in a state of unstable equilibrium, and in perpetual commetion by reason of various and incessant disturbing causes; when we reflect farther upon the recent discoveries of Schwabe and of Sabine concerning the spots on the sun and the magnetic elements of the earth, which show that if the sun or its spots be not the great fountain of magnetism, there is at least reason to suspect a close alliance between solar and terrestrial magnetism, that certain well-known meteorological phenomena, as the aurora, come also within the category of magnetic phenomena; that the magnetic poles of the earth and the poles of maximum cold are at or near the same spot; that the thermal equator is not parallel to or coincident with either the terrestrial or with that which the direct solar my would indicate, but that it follows, and in its double curvatures conforms to the magnetic equator; moreover, when we reflect upon Barlow's theory and Fox's observations, which go to show that the direction of metallic veins of the northern hemisphere, which generally lie north-east and south-westwardly, must have been influenced by the direction of the magnetic meridians of the earth or air: -- finally, I say, when we reflect upon magnetism in all its aspects, we may well inquire whether such a mass of highly magnetic gas as that which surrounds our planet does not intervene, by reason of its magnetism, in influencing the circulation of the atmosphere and the course of the winds.

348. This respectic ora, as the atmosphere may be called, in continually agitated; it is disturbed in its movements The needle by various influences which prevent it from adjusting itself to any permanent magnetic or other in its deof temperature. The experiments of Faraday show that the magnetic force of the air changes with temperature: that it is heat near the constor, and greatest at the poles of maximum cold; that it varies with the seasons, and chances night and day; nay, the atmosphere has regular variations in its electrical the atmeconditions expressed daily at stated hours of maximum and minimum tension. Coincident with this, and as certified in all parts of the world, but especially in sub tropical latitudes, the barometer also has its maxima and become, all minims readings for the day. So also, and at the same hours, the needle attains the maxima and minima sense hours of its dinrnal variations. Without other timepiece, the hour of the day may be told by these maxima for their resums and and minima, each group of which occurs twice a day and at six-hour intervals. These invisible ethings and flowings-the dinrual change in the electrical tension-the diurnal variation of the needle-and the diarnal rising and falling of the harometer-follow each other as closely and as surely, if not quite as regularly, as night the day. Any cause which produces changes in atmospheric pressure invariably puts it in motion, giving rise to gentle airs or furious gales, according to degree; and here, at least, we have a relation between the movements in the air and the movements of the needle so close that it is difficult to say which is cause, which effect, or whether the two be not the effects of a common cause

349. Indeed, such is the nature of this imponderable called magnetism, and such the augustions made by The yes. Faraday's discoveries, that the question has been raised in the minds of the most profound philosophers tio med of the age whether the various forces of light, heat, and gravitation, of chemical affinity, electricity, and resources, magnetism, may not yet be all traced to one common source. Surely, then, it cannot be considered as unphilosophical to inquire of magnetism for some of the anomalous movements that are observed in the atmosphere. These anomalies are many; they are not confined to the easting of the trade-winds; they are to be found in the counter-trades and the calm belts also. There is reason to believe, as has already been stated (§ 288), that there is a crossing of the winds at the calm belts (§ 212), and it was promised to go more into detail concerning the circumstatece which seem to favour this belief. Our researches have enabled us, for instance, to trace from the belt of calms, near the tropic of Cancer, which extends entirely across the seas, an efflux of air both to the north and to the south. From the south side of this belt the air flows in a stoudy breeze, called the north-east tradewinds, towards the equator (see Plate); on the north side of it, the prevailing winds come from it also, but they go towards the north-east. They are the well-known westerly winds which prevail along the route from this country to England in the ratio of two to one. But why should we suppose a crossing to take place here? We suppose so from these facts : because throughout Europe—the land upon which these westerly winds blow—precipitation is in excess of evaporation, and because at sea they are going from a warmer to a colder climate; and therefore it may be informed that Nature exists from those what we know also exists from the six under similar circumstances, but on a mailler such, where our grow, viz, more projectizate than expensions. In other words, they probably been in the Atlantia or much vapour as they takes up from the Atlantia. Then where it may be asked, does the repour Through the expension of the transport of the proper proper, as a constructured to the exclusion of the Through and the proper profess, as a constructured to the exclusion attack they except and the proper profess, as a constructured to the records three in bossion theore is the contractive of the exclusion of the except and the proper profess, as a constructured to the records three in the contractive of the except the e

230. Peris seem to confare this, and the cells belts of Cancer and Capricorus both throw a flood of light type.

The chipler. These was two lands of light airs, caison, and halling which, which tented entirely among the chipler. These was two lands of light airs, caison, and halling which, which tented entirely among the content of the content chips of light airs and makes a day wint; that which flows out on the plast and ages to fired the content-tended (194), and is an airs with. Bure it it that we can have from the east rengel or reserving, and these only belts may be called, an efficie of day airs on one side and of moist on the other? Answer rapport there is the content tended (194), and is a naive in the limit of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a first with a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content tended (194), and is a side of the content t

331. In that conhibited the earth "excited it not in vair, Ho formed it to be limbinised." And it is froming promptions, arregant, and impion to attempt the study of its melanicity upon any other theory; it consists a substantial of the study of the study and the latter min's the study of the study and the latter min's the study of the study and the latter min's the study of the study and the latter min's the study of the study and the latter min's the study of the study and the study of th

so it is with the physical machinery of the world. The theory upon which this work is conducted is that the northzes made for son; and I submit that no part of the machinery by which it is maintained in a condition fit for him is left to chance, any more than the bit of mechanism by which man measures time is left to go by chance.

356. Notwithstanding the amount of circumstantial evidence that has already been brought to show that the air which the north-east and the south-east trade-winds discharge into the belts of equatorial culms, The question of the north-cast and the southerns trace white one aming men the test that from the test, flow does, in ascending, cross—that from the southern passing over into the northern, and that from the om two morthern passing over into the southern hemisphere (see diagram)—yet some have implied doubt by asking the question, "How are two such currents of air to pass each other?" And, for the want of light upon this point, the correctness of my reasoning, facts, inferences, and deductions have been questioned. In the first place, it may be said in reply, the belt of equatorial calms is often several hundred miles scross, seldom less than sixty; whereas the depth of the volume of air that the trade-winds pour into it is only about three miles, for that is supposed to be about the height to which the trade-winds extend. Thus we have the air passing into these calms by an opening on the north side for the north-east trades, and another on the south for the south-east trades, having a cross section of three miles vertically to each opening. It then occurs by an opening upward, the cross section of which is sixty or one hundred, or even three hundred miles. A very slow motion upward there will carry off the air in that direction as fast as the two systems of trade-winds, with their motion of twenty miles an hour, can pour it in; and that conds or finder of air can readily cross each other and pass in different directions without interfering the one with the other, or at least without interfering to that degree which prevents, we all know. The brown fields in summer afford evidence in a striking manner of the fact that, in nature, flakes, or streamlets, or curdles of air do really move among each other without obstruction. That tremulous motion which we so often observe above stubble-fields, barren wastes, or above any heated surface, is caused by the ascent and descent, at one and the same time, of flakes of air at different temperatures, the cool coming down, the warm going up. They do not readily commingle, for the astronomer long after nightfall, when he turns his telescope upon the heavens, perceives and laments the unsteadiness they produce in the sky. If the air brought to the sales belt by the north-seast trade-winds differ in temperature (and why not!) from that brought by the south-nest trades we same the sattlenfler of Nature for arright earlier the two currents would not readly commission (#88). Proof is fully affected that they would not, and there is reason to believe that the six of such current, in strates, or patches, or place, soften, done throat low wy through the six of the other without difficulty. Therefore we may assume if as a postation which Nature conceles that there is no physical difficulty as to the two currents in the contraded of the manifolding.

516. One need not go to sea to perceive the grand work which the clouds perform in collecting moisture from the crystal vaults of the sky, in sprinkling it upon the fields, and making the hills glad with showers of rain. Winter and summer, "the clouds drop fatness upon the earth." This part of their office is obvious are present to all, and I do not propose to consider it now. But the sailor at sea observes phenomena and witnesses for costen- operations in the terrestrial economy which tell him that, in the beautiful and axquisite adjustments of the grand machinery of the atmosphere, the clouds have other important offices to perform besides those merely of dispensing showers, of producing the rains, and of weaving mantles of snow for the protection of our fields in winter. As important as are these offices, the philosophical mariner, as he changes his sky, is reminded that the clouds have commandments to fulfil, which though less obvious are not therefore the less benign in their influences or the less worthy of his notice. He beholds them at work in moderating the extremes of heat and cold, and in mitigating climates. At one time they spread themselves out; they cover the earth as with a mantle; they prevent radiation from its crust, and keep it warm. At another time they interpose between it and the sun; they screen it from his scorching rays, and protect the tender plants from his heat, the land from the drought; or, like a garment, they overshadow the sea, defending its waters from the intense forces of evaporation. Having performed these offices for one place, they are evaporated and given up to the sunbeam and the winds again, to be borne on their wings away to other places which stand in need of like offices. Familiar with clouds and sunshine, the storm and the calm, and all the phonomena which find expression in the physical geography of the sea, the right-minded mariner, as he contemplates "the cloud without rain," ceases to regard it as an empty thing; he perceives that it performs many important offices; he regards it as a great moderator of heat and cold—as a "compensation" in the atmospherical mechanism which makes the performance perfect. Marvellous are the offices and wonderful is the constitution of the atmosphere. Indeed, I knew of no subject more fit for profitable thought on the part of the truth-loving, knowledge-seeking student, he he seaman or landsman, than that afforded by the atmosphere and its offices. Of all parts of the physical machinery, of all the contributes is the mechanism of the universe, the atmosphere, with its offices and its adaptations, appears to me to be the most wonderful, rublime, and beautiful. In its construction, the grandeur of knowledge is displayed. The perfect man of Uz, in a moment of inspiration, thus bursts forth in laudation of this part of God's handiwork, demanding of his comforters, "But where shall wisdom be found, and where is the place of understanding? The depth saith, It is not in me; and the sea saith, It is not with me. It cannot be gotten for gold, neither shall silver be weighed for the price thereof. No mention shall be made of coral or of pearls, for the price of wisdom is above rubies. Whence, then, cometh wisdom, and where is the place of understanding? Destruction and Death say, We have heard the fame thereof with our cars. God understandeth the way thereof, and He knoweth the place thereof; for He looketh to the ends of the earth, and seeth under the whole heaven; to make the weight for the weight; and He weigheth the waters by measure. When He made a decree for the rain, and a way for the lightning of the thunder, then did He see it and declare it; He prepared it, you and searched it out." When the pump-maker came to ask Galileo to explain how it was that his pamp would not lift water higher than thirty-two feet, the philosopher thought, but was afraid to my, it was owing to "the weight of the winds;" and though the fact that the air has weight is here so distinctly announced, philosophers never recognised the fact until within comparatively a recent period, and then it was proclaimed by them as a great discovery. Nevertheless, the fact was set forth as distinctly in the Book of Nature as it is in the Book of Revelation; for the infant, in availing itself of atmospherical pressure to draw milk from its mother's breast, unconsciously proclaimed it.

<sup>- 300</sup> KKAIR

### THE SUBSTANCE OF THINGS HOPED FOR,-THE EVIDENCE OF THINGS NOT SEEN.

We have not tit eerachte the tidochie and deal prodested to de by the atmosphere; but, as the cobing of chook and to dought on attention froction find a duterant dough, we made a return, not demonstrate of the all-rederate compared in the worden of the variana, where radhells transforcation in faced is a shall found, and not at the dough a look gallace, to kild the mode determination from the theory of any

THE CHIEF KYETH, THIS, IS THE ALCED MICRORY THAT ARE MORE REPORTALLY CONNECTED WHILE GREADER, WILL BE REMIXED REPORTED TO IN THE BY PAGES THAT FOLLOW, IN THE MURRLE HOTE THAT MOST OF THE WORSE OF IMPRIBATION, NO CHAPTERS WHILE HE WAS AMMITTERSFER.

AND EXO II WALKED WITH GOD, AND HE WAS NOT: TOR GOD TOOK HIM,-General V. 24.

BY SAITH ENGINEERS TRANSLATED THAT HE SHOULD NOT SEE DEATH; AND WAS NOT SOUND, RECAUSE GOD HAD TRANSLATED BIM . TOR REFORD HIS TRANSLATION BE HAD THIS TESTIMONY, THAT HE PLEASED GOD .-- Holorous xi. 5.

The gifted writer of the 'Protoplast' loss included in the paper on the "First Translation," and in an outline for meditation on "The Ascension," much of what we learn from the Holy Scriptures on these subjects.

Suffice it, therefore, to take into consideration these things in order.

#### ENOCH'S TRANSLATION.

He was not, for God took him. My own impression is, that he was literally scaling with the Angel of the Covenant, just as Adam walked with Him in Eden: and that the ascending Son of God took him with Him as He left the earth. It may be so, but this we asser, that without sickness, without decay, without a moment's pain. Enoch passed away to dwell "for ever with the Lord." Suddenly, and perhaps most unexpectedly, he was called to leave the sin-stained world, where his righteens soul had been vexed from day to day by the unlawful deeds of men, for another home, where sorrow cannot enter, and evil cannot stay. He did not see death. Even the shadow of its darkness fell not upon his pathway, his sun went not down; but the light of life hrightened into the light of immortality. Yet, flesh and blood cannot inherit the kingdom of God. Enoch was changed. In a moment his corruption was taken away, and his sin was purged; his carnal body became a spiritual body; the forces of the material ceased to hold him prisoner; he was free to travel onward through the boundless universe of God. Think of him, for an instant, as taking his wondrous ionraev to the eternal throne, bodily carried through space (that space which to the philosophic mind is more astonishing than the worlds of glory which it parts and holds asunder), passing onward from one sun-star to another, drawing nearer and nearer to the tabernacle of God. No poetic fancy over resched unto the sublimity of Scripture fact. Yet men, who will read with admiration the conceptious of Milton and Daute, see no beauty in the thought suggested by those few simple words of the Spirit, " Enoch was travelated."

As Abel was the first to enter the heavenly Jerusalem, as a spirit freed from its mortal prison, Enoch was the first to dwell there in a glorified material form. Thus he becomen to us the pledge of Christ's power to mise us unto the like privilege, and a seal of the promise. "I will receive you unto myself." How vividly is brought before us the real existence of the Celestial City ! Enoch, our brother, is already there : he has been received into its glory, and will leave it no more till the day of which he prophesied, when he shall come again with the ten thousand saints of God. Like Enoch, in his character and in his ministry, the latter-day saints will be like him also in their Translation. It shall be granted unto them to escape death. That thing which the foolish natural heart will over shrink from, will not be one of their many trials. Passing through the dread tribulation of the last time, they will live on to receive their Master, and hid Him welcome to His earthly kingdom.

Suddenly will the glory of the advent break upon thous. Long as they have expected Josus, the hour of Ilia coming will find them quietly angaged in the ordinary occupations and labours of life-in the field, in the market, in the exchange-mingling with the children of this world, and yet bearing, unseen, the angel's send upon them.

With what glad surprise shall they lift their eyes to the heavens, and behold Him for whom they have waited, and watched, and prayed. Glory and beauty will be spread around Him, such as human thought has never pictured; sugels will be gathered near Him in bright array; saints will follow Him, in forms of spiritual perfection; but upon Hiss, and Him alone, will the gaze of believers rest. All clse will be forgotten in the consejousness that Ilo whose they have so long loved somes is before them; that the veil is taken away from the face of the Crucified, the Nazarene, the Man of sorrow and of grief; new the Triumphant, the Conqueror, the rejoicing Bridegroom,-the ineffable loveliness of His glorified humanity will arrest their regard; as they look upon Him, all

3 8 2

coruptic, weaknes, defemity, and mentality will pass away, and they will be transferred into the image of the barearly data. This will they be prepared to fallow lim in the regeneration whitercover the goals; and they also have been fill mere! Neithenial years may roll eave; the militanial word law; that may change; but which the transfers has to calegorate, nor the end of time, will sever them from Jenne. Early the spent with  $\Pi_{im}$ . In  $H_0$  company they will be transfer to the true Jerusdem,—the incorruptible telerance of the Levil.

Perhaps there were few in Enoch's days who saw anything representative in his life, ministry, and departure from enought them.

Years passed every, the world that then was, perished, and a new world aruse; and God, in the abounding of His mercy towards the "slow of heart," and dull of understanding, gave a repetition of the Translation-type in Elijah, His servant.

There, is something very beautiful in the condencemon of our heavenly Teacher, who, knowing our infimities, and our forgefishness of truth, thus presents it again and again to the haidd. Having and so much upon the features of Eucells principle life and public teaching. I will not dwell on those of Elijah, except to active the striking similarity which exists between the two men who were thus selected to shadow forth the classed saight.

Elijah's character in out described by the Bely Clock in a sentence, as was that of Ezock. We are left to applier if for enservice from the incidents in this interty y to the replainly we find the remaindness we might easily to be underliked. Elijah waked before the Lord in the adoling seems of the sentedistic in large, beam has forward child; be when activity was reflected, as below the in the lever which extent to at frost, that he acked and obtained some of the most signal interpositions of God on his behalf ever granted to Gell. Tostamest believer, "the proper amount but it might not run," and it raised and not be earth for the special order of the proper amounts. If it proped pairs, "to be made and the second pairs of the proper amounts of the proper amounts of the proper amounts of the second pairs of the proper amounts of the proper amounts of the manufactory), mised the dead. For him, and to compliance with his request, that there are the proper amounts of the proper amounts of the proper amounts of the proper amounts of the manufactory), mised the dead. For him, and to compliance with his request,

This have complete use Light's separates from the world? So great was his spirit solitated has it dues from that day of interness, \*1, were a loop an infel." Be was also remarkable for his total propose in the ways of God. We read been of Eighin's look-liking than almost of any sain's departures from the right path. Except in one one instance of his impairates, who he as at more the impairer-tree, and begand to do, his conducted stande examples rather than warning. That he sinced off and grievously there is no doubt, for he was a man of the promises with ourselves, but we cannot read his history and not fetch that day by day, and hour by bourh one pained in the new of life, pressing ferrards to the goal with ever increasing strangth. His dynadese or God is as thirtingly manifested,—be was assembling a must for provi. We his human price as homess treeped his he best in the name of the Lard God of broad. As a secreant, he plended with Jehorah, while as a prophet he prevailed in the sight of none.

In all these several points of character we ce that Sliph was mode like must Exoch, preligening (seven as lead in carrier doys) be dest of the last time. The same animitary cale in the public entails of the last in Eliphia we see the same stern, multicohing demonstrate of God's judgment, the same hely appeal to the answer by fee; and sithogen we do not red of the expression and me on Pyl him in destring the Consing of the Land, we know that he was the herald of that great event, for it is in allusion to this fact that the Spirit, foreithing the manines of that that red by vinese, who shall have straight the way of the Land, shows the mydat same of Sliphia as has title. "Bolds,1 will see also will be sufficient to the first the surface of the Spirit for the surface of the Spirit for the Spir

Let us, therefore, look for a few moments at Elijah's Translation, for it is with this closing triamph for the persecuted believers of Earth's vintage days that we now have most to do.

We find the account in Z King, it it. "It came to pure when the Lord would take up Elijsh into known by a whirthwist." As I can inseque the second-based squire grade of it whirthwist could in an inseque that the count is the whirthwist could in the name from artist to because "Noy, but the power of Cole, who make the works, could carry Elijsh to the "fine-off" lead. The whirthwist was the thing which Elisske saw, it was to the assembling properly that with the choice, which reviewed leads whith which insecuditely provided the cell of Elijsh to the three of God; it was the sys, and the averagement of the gringer in charge, for which he had been taught to fook. When the storm name execution line, the man of God in the contract of the contract

know that his redemption from the sin and sorrow of earth was near at hand, and that before it passed away his immortality would be berun.

manufacture where the constraint of the latter-day? "When we shall see these things come to puss, however, we have the constraint of the latter-day?" "When we shall see these things come to puss, however, we that the kings her of God is might." When these white what sixth, which shall alweep over the through and kingdoms of this words, making the whole earth waste and devolute, the some of God may lift up their locals, and expect their premised glory; for Foders that across in lattled, they shall have put out the translation-form, and

the extrant locaty.

I would notice another circumstance in Elija's removal from this world, "The chariest of fire and horses of fars." Those laves generally been considered a covery of sugals; and the expression in Paula Ixviii. 17, last loss quarted in Burtancian of this view. I have a power has interpretation, and rather think this appearance was designed of God to prefigure that fery baption which is to accompany the day of the Leed, through which the charged satists thall pass witner.

As the fire injured not the transformed spiritualized body of the ascending prophet, so the brimstone-min of the day of Christ will have no power over the ransomed of the Lord. In the unled of it shall they well, which Form of the Sen of God; and their neunies will acknowledge concerning them, "Not an latr of their hoad was singed, neither wore their gramment changed, and the small of fire passed not on them."

then word more. Elijah was taken np inte Auree. If, then, a nonentary doubt could ever lawe entered the mind as to the locality of the translated Easter, this express defeaturion afteogether removes it. And this is the everlasting answer to the saying of some, that the redocumed are to pass eternity mpon this earth in a renorated condition.

In homen Christ hatb prepared our places for us, and to the very innormost sanctuary of our God shall the translated saints have entrance.

Yot once again after Elijah's glorification did Jehovah present to man, in rivible manifestation, that great truth which pseudiarly comes before us for consideration in this Paper,—the Transfernation of those Saints whose privilege it will be to essence death.

I must ask my readers new to carry forward their thoughts to the days of the Sou of Man, and to the vision of the "hely mount."

In the bor of Chrish's Transfogration, He showed Himself as the pattern of the Translation-Smith, just as in the borr of Hir centum from the greys, the showed Himself as the gattern of the Beariette-Scalin, Litin important at all times to mark the researcing of rank in the Hifs of Leony, and it is especially necessary to notice most what circumstance this peculiar receivant of this glays was made, In the inited Loke (remes 16-20) we read of a coverantion held between Jenna and Hifs followers respecting His dash at Jernsham. We who have sever hower Christ that he Jod, cannot hangup the angulas with which the carcitation state spec to the berrit of the contraction of the state of the to Peter Linux as send for Engineering the Association for the translation of the State of t

Even although the Lord updo his the same discourse of Illis reservacion from the dout, and the galary of Illis Novad Arten, all was to trap to the servicing disciples, and the one thing pravate the test imagination was the incritables unferring of their precion friend. Partly in companion to the intentity of their grid, partly that they might be too better transens to our of ullimited tracta, Circle intented these of Illis criticals, to be held by anticipation the future glory of the day of God. It is written in the 2rid vece of the name chapter—"And it cannot to pass about an eight day after bees surject, let level Peter and John, and Johnson, all very thin to amount in part and the surject of the property of the property of the contract of the property o

Think, now, what great truths were brought before the disciples in this heavenly vision.

1st. It set forth the nature of that mighty change which must pass upon flesh and blood, before it can inharit the kingdom of God.

Although it was the incorreptible body of Christ which was before them, yet it changed as they good upon it; the marred vising, and browd from of corrow, were transferred, and wors another libeases. Matthew describes the appearance of glevy by the expression—"Illi face did white as the sam," using absort the same words in which adds relying this libeaty as seen in the Apocalpies wise. (Rev. 1-8, A. at it was with example, it is shall be with His pupils; the fashion of their constances shall after in the day of their relespition, assuming matter the contract of the con

zadly. The vision showed them the certainty of Christ's future glorification. He who had preclaimed to them His approaching degradation, and rejection of men, was for one brief meanest shewn to them, in the Forn which His should hereafter wear, as king of kings and Lord of brels. They saw Him declared to be the 500 of God; they were cy-witnesses of His majesty; the voice of His Heavenly Father proclaimed Him as the Messiah, and attested His mission to the world.

stdy. This vision toght the Bearrection of the Dool, and the Transfiguration of the Living, in their unconfort ourselves with the receditor of Christia figury. Noses appeared as it he preparentative of those who, though they be "dool, yet shall live," and Elias as the Representative of those who, living and believing in Christ, "shall never did." The cos Saints was a center of the recurrectory, the other one enter of these formation. Both were revealed in one cases give, standing side by side with Illin, who is the Lord of the Dual, and the Living, the Eremal Bold of the Ries and the Christy.

Thus did Jesus bring subdenly before them the events of that latter day, when Hz shall stand upon the sorth, letween two companies of the redeemed, those who have ecrosored selable, and those who have negred death through their union with Himself, the heavenly Adam; whose glorieus image thay shall both wear henceforth for ever.

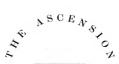
Now, observe how this remarkable revelation of things to come met the doubts, and sorrows, and perplexities of the disciples. Christ had spoken of this future giory, and they had not understood His words. Therefore "He was transferred before them." He had teld them of the resurrection from the dead, and they had marvelled. Therefore Moses, the resurrection type, stood before them. He had referred to those who shall be found on earth at His second coming, and they had doubted of His meaning. Therefore Elias, the translated Prophet, also appeared as the transfiguration-type. Remember, also, how it is said.—These two men spake with Jesus of His decease, which He should accomplish at Jerusalem, that very event to which they had looked forward with such agonized feeling. Think you not that, as they listened to that colestial converse, they learnt the accessity of their Master's suffering, and knew that, were He to turn from His love-work, neither dead Saints could rise, nor living Saints be changed, nor fle himself, the Covenant Head of both, be glorified? The vision passed; the disciples found thenselves alone with Jesus; He was again to them the man of sorrows, the Son of Mary; and they descended the menmain with Him, to mingle again with the growd from which they had been withdrawn. It is evident, however, that they posilered over what they had seen; and it is very remarkable that Matthew relates a conversation which took place between them and their Lord, inst offer the vision, and in reference to it :-- "Jeans charged them. saying. Tell the vision to no man, until the Son of man be risen again from the dead. And His disciples asked Him, saying, Blay then say the scribes that Elias must first come?" They seem to have connected Elijah's appearance on the mount with the prophecy of Malachi, without possessing any clear and definite ideas on the subject. Mark well Christ's answer-" Elias truly shall first come, and restore all things. But I say anto you, that Elias is come already, and they knew him not, but have done unto him whatsoever they listed." In these words Jusus explains the nature of the Elijeh-type, and teaches the disciples not to look for the actual process of the translated prophet. As John the Baptist, coming in the spirit and power of Elias, preceded His first advent, so in like manner another shall arise at the time of the end, bearing the prophetic name, and he, with his brethren, men of Elijah's character and Elijah's ministry, shall prove the heralds of the second advent.

As years rolled on, the truths taught to Peter, James, and John, in the hear of Apocalypse, spent with Jerus on the mount, became better understood; and when the New Testament Church arose, all the Apostles with one voice proclaimed them boldly, clearly, in demonstration of the Spirit and in power.

or consideration. Let fix to the virtings of St. Paal, and see how bootifully be tenches upon the thems of our consideration. Let fix to 1°C or,  $c_1 = -W$  we shall sat all they, have whall the let benego in a meant, in the virishing of an  $c_2 = W$  to the state of the part is really so instantaneous, we entire, so aliating; a change from server be  $c_2$ . From pain to perfection, there we weaknes to strength, from deferming to heavily, from corruption to immerability  $c_2 = W$  to the part of the two desires to the letter of the state of the letter of the let

How beautiful is the thought, that the last set of Chich's Militant Church on earth will be to soo for their brothers. Even sithleapt they long to globar around their proposable, Solvien, they will pause at the threshold of their hoppions, and tury for the perfection of the beloved abspers in the dust of earth. Then shall the rison and the changed account logater to near tell line from whom all their future bloscolous shall be duried. Then shall the Bosanas of the reference burst forth as one mighty sound from unnumberred voices—"Salvation to our God which dirther home the threes, and must ha Lank." One final word. I know that of last years a strong claim has been did by many Christians to offen the source which is a polling placeing over a; and to be among the generation of show which all the new strong of the Lord's Tariat. Parkage this may be the case with some readers of this Paper, their duity prayer is that God been considered to the source of the consideration of the consi

Let your mission recentible that of Ecoch. Think of the responsibility of Golf's her vitimesses in a fallow world. You will have be leavy new pirt in simplifier stranged has been very been have between Golf a supant Stania. In a precide some surprise of the term would register principalities, against powers, against the surmour of Golf, that ye may be able to withstand in the will day, and having down all to such. Four not to pure pulsey that Christ cross-th quickly, while the world precision: "There is no Golf." Pear not to stant by the altan of Bolf, and appeal on the freq sowers of the day of the Leaf. There are to that of the appeals, and larger indice creatible into bots, both up to between, and see Jesus at the right hand of Golf. This whose right it is, shall the chamilian the adult given. Downs you could in particular large the analysis of the contraction of the co



I arend divid by Father, and four Father; and to by Geo, and free God.—St. John ee. 17.

And the little of His service andiag and religious them. And it came to pask while He redshift them, He was parish from them, and craised up into Hampin. And that worshift the Him.—St. Labe exit, 50-52.

YE MEN OF GALLEL, WAY STAND THE GALENG OF INTO MEASUR? THIS SAME JABUM, WHICH IS TAKEN UP FROM TOU INTO HEAVEN, HIALL SO COME IN LIRE MAXXIZ AS TE RATE SEEN HIM OF INTO MEASUR——Acts 1. 11.

I. THE MANNER OF THE ASSESSMEN.

1. Nuddenly.

When in converse with His followers; they not thinking of His leaving them

Printely.
 Not before the World, but before a few believers representing the true Charch.

 Microculusely.
 Contrary to the existing laws of gravity, do. An earnost of the time when the resurrection bodies of the Saints shall be able thus to move from place to place independently of physical laws.

11. THE ORDER OF THE ASSESSED.

To exter into His Glary.
 The exaltation and triumph are contrasted with the previous humiliation.

To lice in the Holy Place as the visible mitness of the success of His Mosion.
 All the intelligent Angelie Universe behold Him as the justified and accepted Mediator. The apirits of

just men see in Him the Redeemer whose accomplished work has saved them. God the Father having admitted them to Heaven so trust, knowing that Christ would be their Saviour, the accession sealed and confirmed their right to glory.

 To take His place as the Forevaner of His New Testament Church, We six with Him in Heavenly places.

We set with thin in Heaventy pasces.

4. To commence His intercurry much.

His presence in heaven is the signal for the easting down of Satan as the accuser of the Brethren.

Practical INTERENCES.

1. The promise of the return: "This same Jesus shall so some in like manner."

 The Holliness of the Expertant Church a necessity: "Seeing ye look for such things," dec. Notice: "The Lord's last act was theming. Hills" He blessed them," dec.
 The High Priest's stittled on returning from the Holy Place—arms outstretched in blessing. He concerns.

to Bless.

3. The Disciples now in the Accession a sign of Divinity,—"step concloped fits."
Yee then be a set are two set or the time, a trave we were a set, a text, a and a season of the Loan, that are present that which a set a season of the Loan through sealth sources from direct with a second, which the second fits of meants with a second fit of the second fit of the

WHEREFORE COMPOST ONE ANOTHER WITH THESE WORDS.-- 1 These, iv. 15-18

### "THOUGHTS ANALYTICALLY ARRANGED."

I here desire to acknowledge the assistance I have derived from a cerefully compiled and analytically arranged work, by Henry Southgate, entitled 'Many Thoughts of Many Minds. From this relatable series I select as a specimen, for those who are still unacquainted with the work, the four following topics of great general interest, to which I add a few extracts from other authors, likewise connected with these subjects.\* These tooics are The Biblic Cell Cristic and Circlistiant.

As an introduction I give Barton's poem entitled

.

Tirk works of man may yield delicht.

Then soft as pity's sigh ;-

A glorious sight may seem : But neither winds nor boundless soa,

The mighty occan's sample breast, Calm or convulsed, in wrath or rest,

Though beautiful or grand, can be

A poet'e noblest theme.

# A POETS NOBLEST THEME.

The earth, our own dear native earth!

Give endless praises birth : He gave Hzs Son for man to die!

He sent Hts Severt from on High !

Oh! be that consummation blest!

And let RESCRIPTION be confest

A poet's noblest theme.

And justly merit praise; Has charms all bearts mey own ; They eling around us from our birth .-But though a while they charm the eight, More loved as longer known ; That charm in time decays. The sculptor's, painter's, poet's skill,-Hers are the lovely vales, the wild The art of mind's creative will. And countless forests, mountains piled In various modes may teem ; On high, and many a stream But pone of these, however rare Whose beanteous banks the heart may love. Or exquisite, can truth declare Yet noce of these can truth approva A port's noblest theme, A poet's noblest theme. The virtues, which our fallen estate The sun, sprising, may display His glory to the eye, With foolish pride would claim, And hold in majesty his wey May, in themselves, be good and great,-Arrosa the vaulted sky To us an empty name. Then sink respleadent in the west, Truth, Justice, mercy, patience, love, May seem with man on earth to rove, Where parting clouds his rays invest. With beauty's softest beam; And yet may soly seem; Yet not unto the sun belong To none of these, as mon's, dare I The charms which consecrate in sonr The title of my verse apply-A poet's noblest theme. "A poet's noblest theme." The moon, with yet more touching grace, To Gop alone, where power divine The silent night may cheer Created all that live; To Gop alone, can truth assign And shed o'er many a lonely place A charm to feeling dear; This proud prerogative :-But how shall man ettempt His praise, The countless stars which grace her reign, A voiceless, but a lovely train. Or dare to sing in mortal lays With brilliant light may gleam; OMSIPOTENCE SUPREME! But she per they, though fair to see, When aeraph-choirs, in heaven above, And formed for love, can never be Proclaim His glory and His love, A poet's noblest theme, Their noblest, awestest theme? Thanks be to (iod ) His grace has shown The winds, whose music to the ear With that of art may vie-How sinful man on earth Now loud, awakening awe and fear, May join the sougs which round His threes

\* The extracts I have made are rearked \*.

#### THE BIBLE.

They had the Bible. Hast thou ever heard Of such a Book? the author, God himself; The subject, God and man, salvation, life And death—eternal life, eternal death— Dread words! whose meaning has no end, no bounds! Most wendrons Book ! bright candle of the Lord! Star of eternity ! the only star By which the back of man could navicate The sea of life, and gain the coast of biss Secure ; th' only only star which rose on Time. And, on its dark and troubled billows, still, As generation, drifting awifuly by, Succeeded generation, threw a may Of heaven's own light, and to the hills of God, The eternal hills, pointed the sinner's eye. By prophets, seers, and priests, and sacred bards, Evangelists, apostles, men inspired, And by the Holy Ghost ancinted, set Apart, and consecrated to declare To Earth the counsels of the Etarnal One-This Book, this boliest, this sublimest Book, Was sent. Heaven's will, Heaven's code of laws entire To man, this Book contained; defined the bounds Of vice and virtue, and of life and death; And what was shadow, what was substance taught. Much it revealed; important all; the least Worth more than what also seemed of highest worth. But this of plainest, most essential truth : That God is one, eternal, holy, just, Omnipotent, omniscient, infinite; Most wise, most good, most merciful and true : In all perfection most unchangeable : That man, that every man of every clime And hue, of every age and away mak, Was bad, by nature and by practice bad; In anderstanding blind, in will perverse, In beart corrupt; in every thought, and word, Imagination, passion and desire, Most atterly deprayed throughout, and ill, In sight of Heaven, though less in sight of man; At comity with God his Maker born, And by his very life an heir of death : That man, that every man was, farther, most Unable to redeem bimself, or pay One mits of his vast debt to God; may, more Was most reluctant and averse to be Redeemed, and sin's most volactary slava : That Jesus, Son of God, of Mary born In Bethlehem, and by Pilate crucified On Culvary, for man thus fallen and lost, Died: and, by death, life and salvation bought. And perfect righteenmess, for all who should In His creat name believe: That He, the third In the sternal Essence, to the prayer Sioreer should come, should come as soon as asked, Proceeding from the Father and the Son, To give faith and repentance, such as God Accests; to open the intellectual eyes, Blinded by sin; to bend the stubborn will,

Pervenely to the side of wrong inclined, To God and his commandments just and good; The wild relellious passions to subdur, And bring them back to harmony with heaven ; To purify the conscience, and to load The mind into all truth, and to adorn With every boly ornament of grace, And aspetify the whole renewed soul, Which henceforth might no more fall totally, But persevere, though arring oft, amidst The mists of Time, in plety to God, And sacred works of charity to men : That he who thus believed, and practiced thus, Should have his sins forgiven, however vila; Should be sustained at mid-day, more, and even : By God's omnipotent, eternal grace: And in the evil hour of sore discase, Temptation, persecution, war, and death-For temporal death, although mustinged, remained-Beneath the shadow of the Almighty's wings Should sit puburt, and at the Judgment Day Should share the resurrection of the just, And reign with Christ in bliss for evermore : That all, however named, however great, Who would not thus believe, nor practice thes, Bat in their sips impenituat remained, Should in perpetual fear and terror live; Should die unsurdoned, unredeemed, unsured : And at the hoar of dogs, should be cast out To utter darkness in the night of hell, By mercy and by God abandoned, there To roup the harvest of eternal woe

This did that Book declare in obvious phrase, In most sincere and honest words, by God Himself selected and armaged, so clear, So plain, so perfectly distinct, that some Who real with hamble wish to understand, And asked the Spirit, given to all who subsed, Could mist abler meaning, blassed in inevenity light,

This Book, this holy Book, on every line Marked with the seal of high divinity, On every leaf believed with drops of love. Divine, and with the sternal hamidry And signsture of God Almighty stamped From first to last, -this ray of sacred light, This lame, from off the everlasting throne, Mercy took down, and in the night of Time Stood, casting on the dark her gracious bow ; And avermore beseeching men with tears And earnest sighs, to read, believe, and live. And many to her voice gave our, and read, Believed, obeyed; and now, as the Amen, True, Faithful Witness swore, with snowy rob And branchy jalms surround the fount of life, And drink the streams of immortality, For ever happy, and for ever young.

APPENDIX. THE BIBLE. 501

Many betieved; but more the truth of God Turned to a lie, deceiving and deceived: Each with the accuraced sorcery of sin, To his own wish and vila propensity Transforming still the measure of the text.

Hear, while I briefly tell what mortals proved, By effort vast of ingenuity, Most wondrose, though perverse and damnable, Proved from the Bible, which, so thou heat heard, So plainly spoke that all could understand, First, and not least in number, argued some From out this Book itself, it was a lie, A fable, framed by crafty men to cheat The simple heed, and make them bow the knee To kines and priests. These in their window left. The light revealed, and turned to fancies wild; Maintaining load, that rained, heledess man Needed no Saviour, Others proved that men Might live and die in sin, and yet be saved, For so it was decreed; binding the will, By God left free, to unconditional, Unreasonable fate. Others believed That he who was most criminal, debased, Condemned, and dead, unaided might ascend The beights of virtue : to a rericet law Giving a lame, halfway obedience, which By uncless effort only served to above The impotence of him who vainly strove With finite arm to measure infinite : Most uscless effort, when to justify In sight of God it meant, as proof of faith Most accretable, and worthy of all praise. Another held, and from the Bible held, He was infallible, most fallen by such Pretence; that none the Scriptures, oven to all, And most to humble-hearted, eaght to read But priests; that all who wentured to disclaim His formed authority, incurred the wrath

Of Heavun; and he who, in the blood of such, Though father, mother, daughter, wife, or son, Imbrued his bands, did most religious work, Well pleasing to the heart of the Most High. Others in outward rite devotion placed: In meets, and drinks, in robe of certain shape, In bodily abasements, banded knees : Days, numbers, places, vestments, words and names; Absendly in their hourts impointed That God, like men, was pleased with outward show, Another, strapeer and more wicked still. With dark and dolorous labour, ill profied With many a cripe of conscience, and with most Unhealthy and abertive reasoning, That brought his sanity to serious doubt, 'Mong wise and honest men, maintained that He, First Wisdom, Great Messiah, Prince of Peace, The Second of the uncreated Three Was nought but man, of earthly origin : Thus making void the sacrifice divine, And leaving guilty men Gol's hely law Still unatoned, to work them endless death.

These are a part; but to mitter thee all The meastrow, natherised intanties, Innigitation fourfalls, Innigitation fourfalls; aboved, Innigitation fourfalls; aboved, Innigitation fourfalls; aboved, Innigitation fourfalls; aboved to the control of the control of

Not wishing to retain God in their minds,

In darkness wandered on.

Pollok

### \* BIBLE-the Attributes of the.

THE LAW OF THE LORD IS PERFECT—CONVENTING THE SOUL;
THE TESTIMENT OF THE LORD IS SUBE—HAKING WISE THE SIMPLE.

THE STATUTES OF THE LORD ARE RIGHT-REJORING THE HEART!

THE COMMANDMENT OF THE LORD IS PURE-ENLIGHTENING THE STIR.

THE FEAR OF THE LORD IS CLEAN-EXPURING FOR EVER :

THE JUDGMENTS OF THE LORD ARE THER, AND BIOHTBOUS ALTOGETHER.

Morr to be desired are trey tran gold, yea, than hoof five gold; sweeter also than bonky and tha honey-comb. Mordover by trey is thy servany warned: And in exprise of them there is great reward.

-

FOR AS THE RAIN CONCERS BOWN, AND THE ROBER THEN RECEIVED, AND RETURNING NOT THETRER, BUT ADDRESS HEARTH, AND BACKLES IT OF BROWNERS AND TO THE RATHER AND THE RESTRICT HEARTH. SO BACKLES TO THE ROTTER AND THE ROBER AND TO THE RATHER STATES SO BRAILE MY TWO DE THAT OUTTO HEARTH AND THE ROBER STATES COTTON COTTON MY COLUMN TO THE ROBER STATES AND THE ROBER THAT OUT OF THE ROBER AND THE ROBER STATES AND THE

From a child thos hast known the Holy Schitters, which are able to make ther whe ento salvation, theogor path which is n Ceret Jesus. All Schitter is no capabilities. All Schitter is the properties of the interpret is given by the matter of God. and is propertied by distribution, for reference the company of the properties.

for instruction in rightrougher; that the man of God may be perfect, thosocolily furnished unto all good works,

St. Paul.

The Word of God is quice and powerful, sharpfr than any two-edged swoed, piercing even to the distribution  $3 \pm 2$ 

ASUNDER OF BOUL AND SPIRIT AND OF THE JOINTS AND MARROW, AND IS A DESCRINER OF THE TROUBERS AND INTERES OF THE

For all flosh is as crass, and all the ulgay of man as the flower of grass. The grass withherth, and the flower filledd falleth away; set the word of the Lond exdicate for even. And this is the word which sy the gooffle is peraceded with too.

\*\*Reference of the filled filled for the court of the court is peraceded with too.\*\*

### BIBLE-Besuty of the.

I nee the Scriptures not as an arrenal to be resorted to only for arms and weapons, but as a matchless temple, where I delight to contemplate the beauty, the symmetry, and the magnificence of the structure, and to increase my awe and excition my develoring the fluid where presented and adored.

### BIBLE-Benefit derived from the.

The sucred page
With culm attention son! If oo thy soul,
As thou dost read, a ray of purer light
Break in, O, check it not, give it full acope!

Admitted, it will break the clouds which long Have dimmed thy sight, and lead thee, till at last, Convictions, like the sun's meridian beams, Humicate thy mind.

Samuel Haves.

### BIBLE-sometimes a Closed Book.

Men, thes at variance with the traith, Deman, though thire give be spen; preddens some Of error; others will aware they err, To whom more gills and thomas are justly due To whom more gills and thomas are justly due to the property of the spen of the spen of the Deserts, and has a hy-enry of this own; So month the realises sucrosmos to this; And love of singularity pervails, Yet this, officaries as it is, precede, Howev's unsper law, then when the Book of God Or from the strengthen unspir'd; in order wing work, Or from the strengthen unspir'd; in order wing work, What blood the sowing of it in the world Has cost; what favour for himself he wins, Who meeley clings to it.

Christ said not to his first conventicle, Go forth and preach impostures to the world; Best gave them Trush to build on; and the sound Was mighty on their lips; nor needed they, Beside the Gospel, other agent or shield, To aid them in their warfare for the faith.

#### BIBLE -the Christian's Bulwark.

The Christian faith has been, and is will, very freerly and shoriassly starteds. How many offents have been and are will made, low many both reviews and first-likes able or willy, have been and are spread increased. The other has destroy it in mean's mixed 1. Where has the redoubtable struggle been supported with the greatest energy and success and when has definable of his been the defined. There where the rading of the formation of the structure of the definite of the structure of the definition of the first started and the structure of the definition of the structure of the definition of the structure of

# \* BIBLE—and the Common People.

It was wonderful not see with what jey this look of God was received not only among the learnoder nort, has pennilly all England over, ramong all the valgar and common peoples and with what greenlines God's Word was read, and what record to places where the reading of it was! Everybody that could, longlet the look, or bustly read it, or get extens to read it to them, if they could not demonstere. Divers more clearly people learned to read on purpose, and versa title boys blocked, among the rest, to hear pertines of the Body Servipare read.

### BIBLE-Divine Character of the.

As a pown, mend and distaction, is in a reportury of divine interiors— collection of the deepent invasitions of start, beauty, inside, bolizon—the past, the present, the future—which, by that for winton, the power between the past amount of the power o

### \* BIBLE—the best Expositor of the.

Forms the street of the street and t

St. Paul, Ephesians i. 16+23.

It is most plain (writes Lather to his friend Spalation) that we cannot attain to the understanding of Scripten, other by standy, or by strength of indestey therefore, now find day must be a begin with payers. Extract the Lord to design to great yee, in Illi rich mercy, rightly to anderstand like Word. There is no other interpretable to the Word of Other that Anthor of that Word Himself; even in Ille has wide. They shall all be tampled Gold. Hepe nothing from year study or the strength of your intellen; but simply part your trust in Gol, and in the influence of Illi spike all spikes all spikes all spikes and the product of Gold.

### BIBLE Fulness of the.

It has God for its author, salvation for its end, and truth, without any mixture of arror, for its matter:—it is all pure, all sincere; nothing too much, nothing wanting.

\*\*Look.\*\*

#### BIBLE-Glory of the.

```
A glory gilds the secred page,
Majestic like the son;
It gives a light to every age;
It gives, but borrows none,
```

### BIBLE Hope Begotten by the.

The Bible is a precious noterhouse, and the Magan Charta of a Christian. There he roade of his housevily Pather's tree, and of his righ gaviories a figuries. There he roade as map of his travelly the wilderness, and a handsony, too, of 'inanan. And when he slimbs on Blogalis' too, and view the premised land, his heart begins to burn, delighted with the Blossed property, and namest at the rich and free artistice. Best narre provides though a decent cost, looks on the Bible as a dell book, and peruseth it with such indifference as you would read the tilt-devide belonging to another man's status.

### BIBLE - Imperishableness of the.

ALL FLESH IS OR USE, AND ALL THE GOODLINGS THEARDY IS AS THE FLOWER OF THE FIELD: THE GRASS WITHERELH, THE
THE VALUE IS BRACKET THE SPIRIT OF THE LORD SUMMERTH FROM THE SURELY THE FROMER TARRIES, BUT THE WOOD FOOG THO SHALL STUNK FOO EVEN., LOT THE WOOD FOOG THO SHALL STUNK FOO EVEN.

# \* BIBLE—the Inditer of the

The Inditor of the Scriptures did know four things, which no man attains to know; which are, the mysteries of the kingdom of glovy; the perfection of the laws of nature; the secrets of the heart of man; and the future ascession of all ages.

\*\*Leed Rown (Birds, i. 28)

### . BIBLE-and the Invention of Printing.

. Printing, however, was the most istellectual of all the arts, and yet it will now be assaidest that Infinite Wisdom was by no means in any hatte to employ it. The orators of threece and Rome had been allowed to try their skill once more in improving manking.

The classics were permitted to enjoy their second, and more splendid triumph, and appeared before the work of the result of the splend over done; and since the colloquial dialect, the tongous spoken by the people, was not the language of what was called the Chards, in any nation of Europe, and Latin alson was ber language everywhere, then let that tongue, through the press, also enjoy suspecedented stope. Let no Postifi ever after have any reason to complain that anaple justice was not first done to ke aystem. Let the first have high fill of letter, even to everflowing. Let him richly enjoy the first fruits, or the highest place, may, the monopoly of letter, even to everflowing. Let him richly enjoy the first fruits, or the highest place, may, the monopoly of first the press, above an hundred editions of the Latin Bible, for such was the fact: and throughout Europe, let there be huntly polycon still, more than

" ten thousand words in an unknown tongue."

We are impossively bound to distinguish between the ometry of Greece and Roan, or the fields language of literature, and the vice of Aphorain in Bit Word, when it cans reached the acre the eye of our fore-fathers, in their native tongue, is distinguish as carefully, between the power of the press, and the power of safet insued from it, between principle, both were spinned in the two years of but press, and the acre is press, when the power of the power is pressed in the power of the power is pressed in the power of the power internation and the power of the power is pressed in the power of the power is pressed in the power of the power internation and the power of the power is pressed in the power of the power of the power of the power is pressed in the power of the power is pressed in the power of the power of the power is pressed in the power of the power of the power is pressed in the power of th

#### BIBLE-Noble Composition of the Book of Job.

The Both of f-M $\sim$ 1 and that, spart from all theories about it, one of the grandout things ever written with prec. The first indexed, as if it zero and Haberier, such a noble investedly, different from noble patriction, or e-orderision, reigns in it. A solid body of all more body II is our first debtat adversards of the neverenting in the state of the stall by understanding heart. So true every way true organization which is about g in the stating or the stall by understanding heart. So true every way true organization which is a state of things no loss that spicifical: the horse—but Three details he need with state  $g^{(1)}$ —be longed at the aboling of the specififont fiving Hinneson were never since drawn. Solidine survey, subline reconcilation; object of the state of the state

#### BIBLE-the Guide of Life.

It is a belief in the Bible, the fruits of deep meditation, which has served me as the guide of my moral and literary life. I have found it a capital safely invested, and rightly productive of interest.

Goethe.

### BIPLE Misapplication of the.

Beware of misophyling Scripture. It is a thing easily done, but not so easily answered. I know not any ore gap that hath let in more and more dangerous errors into the Church than thin,—that men take the word of the secred text, fitted to particular occasions, and to the condition of the times wherein they were written, and then apply these to themselves and others, as they find them, without due respect had to the difference that may be between those times and cases and the research.

#### BIRLE -- contains the Mustery of Musteries.

Within this awful volume lies The asystery of mysteries: Happiest they of human race, To whom their Ged has given grace To read, to fear, to hope, to pray, To lift the latch, to force the way; But better had they ne'er been been Who read to doubt, or read to scorn.

Sir Wolter Scott,

### \* BIBLE-Opposition it had to encounter on being introduced into English.

After realing the histories of Italla, Fore, Stowa, Strype, Burest, Collier, Turner, Lingui, and Stomes, well as the histories of the translations by Lewis, Herbert, and Edikin, with the Blicklin identitue of Townsey, Cetten, and Horne, still no one can possess any adequate or correct iden of that nightly plasmar of afacts, policy, and power, or finally arrayed against the introduction of driven turn in our maintre tonges in the histophose, one consequently no reader has ever had before him the mean powerful aliquity, in compositively modura times, of the invasibilities energy of the Diricks Word. Collegister deletions (Capital Actions Copyling to Manage of the Edits Montal Confidence and Confidence an

#### BIBLE Poetry of the.

The Scripture affords us a drivine pasteral drama in the Song of Sodomo, consisting of two persons and a deable shorms, an Origan rightly laplace; and the Apocatypas of St. Obin is a majestic lange of a high and stately tracely, shatting and intermingling her soloma scenes and acts with a seven-field chorne of halleshiphs and harping symptonies. And this my opinion, the grave authority of Parsus, connenting that book, is sufficient to confirm. Or, if consion shall lead, to initate those magnife oles and hymas, wherein Findares and Callinaches are in most things worthy, some others in their frame piclosion, in their matter most an end hally. But those forequest soage, throughout the laws and prophets, beyond all these, not in their divine argument alone, but in the very critical art of compatition, any be easily made appear over all but kinds of prip soays to be incomparable.

### BIBLE-Poetry, Oratory, and Politics of the.

There are ne songs comparable to the songs of Zion; no orations equal to those of the Prophets; and no politice like those which the Scriptures teach.

1bit.

### BIBLE-Simplicity of the plan of Salvation.

Oh! how unlike the complex weeks of man, Heaven's easy, artiess, unencamber'd plan; No meetricious graces to beguile. No clustering ornaments to clog the pile: From orientation as from weaknoss free; It stands like the ceruless arch we see, Maiestic in its own simelicity. Inscribed above the portal, from sfar, Conspicuous as the brightness of x star, Legible only by the light they give, Stard the soul-quickening words—Believe and live.

#### BIBLE-Sublimity of the.

There is not a bode on earth no foreuselis to all the fold, and all the million affections, or no originally to below the approximation. Longuage justices, allow open cell calmidations, and forcers. In the relationship in the contract the money, four-flower, and power. . . . . Such of the descritions of the general area level to human experity, appear to a granulable to the general term that and considers termslifty. All the general interface of the heathers wordly, all the presentations of Pythagerons, Scientists, and Aristotia, but never been able to produce such a system of most offered, and or mridinal account of Providence and from any sit to be finall in the New Textaments. Bestive.

I have carefully and regularly permed those Holy Scriptures, and am of opinion that the volume, independently of the divine origin, contains more sabilistic, purer morelity, more important history, and fine ration strains of elopence, than can be collected from all other books, in whatever language they may have been written.

So William Locat.

#### BIBLE-Teaching of the.

The Scurryans teach us the best way of living, the sollest way of suffering, and the most confortable way of dying.

Better teaching
The solid rules of civil government,
In their majosite, unaffected style,
Than all the cratory of Greece and Rome.

In them is plainest taught, and casical learns, What makes a nation happy, and keeps it so; What ruins kingdoms, and lays cities flot: These only, with our law, best form a king. Milton.

# \* BIBLE—the Translator of the, to the People of God in England.

I have her brashed, bestform and stoors, now there and tending bloods in Cloris, the New Tortomest, for your spirited elliptics, recultives and sour Technicisy instruction, and benefits the tends to the sear in the tends are like the spirited as the spirited produced by the spirited of genes to interpret the same of the Secquient, and transing of the Sejecti, that, I to consider and produce me and the wide the upon if a structure, and the search the spirited produced. All of the spirited is made placed to the search that the spirited produced in the spirited produced and the spirited produced to the spirited produ

The cosm that need as to transite, I looght them that when shad inspire, that that I hadde relever their, Neemers, I regional to imprehens for the side is the like a but, which that will be indicated be shown the notal with in directions, where they count that strends, and when to transite to the discuss or formed discussive, either no draphylit that he would very so up to the compared to the contraction of the contraction of

After it had pleased God to put in ag usind, and also to give no grave to translate this fore-robustred (before-maximal).

New Testament into our English tongrue, housever we have done it, I supposed it very necessary to put you in renumbrance of cretain points.

Typolite (n.n. 1928).

#### BIBLE-Value of the

The most learned, sector, and different surfaces cannot, in the lengest life, obtain an entire knowledge of this conviousne. The more deeply he works the mins, the richer and more abundant be finds the over; new light continually beaus from this source of heavenly knowledge, to direct the conduct, and illustrate the work of God and the ways of men; and he will at least leave the world, confessing that the more he studied the Scriptures the filled conviction be lead of this one inconvoca, and of their instinuate other.

### GOD-Adoration of

White earthy objects are channel by familiarity, the thought of God becomes to the devote two continually brighter, richer, rather privates, relative from all that to decrees of Nature and Previous, and attracts to instit all the glaries of the universe. The devote man, especially in moments of strong religious seculity, feel indicately that the short food the true happings of small. But he finds a Being feet in securion and fore, whose character is incubateable, who, after ages shall have passed, will still be uncomprehended in Section of the collection of the control of the collection. The control of the collection of the collection.

### GOD-All in all.

It is a poor philosophy and a narrow religion, which does not recognise God as all in all. Every moment of our lives we breathe, stand, or move in the temple of the Most High; for the whole universe is that temple. Wherever we go, the testimony to Dia power, the impress of His hand, are there. Ask of the bright worlds around us, as they roll in the evertesting harmony of their circles; and they shall tell you of Him, whose power launched them on their courses. Ask of the mountains, that lift their heads among and above the clouds; and the bleak aummit of one shall seem to call alond to the snow-clad top of another, in proclaiming their testimony to the Agency which has laid their deep foundations. Ask of ocean's waters; and the roar of their boundless waves shall chant from shore to shore a hymn of ascription to that Being, who hath said, " Hitherto shall ye come and no further." Ask of the rivers; and, as they roll onward to the sea, do they not bear along their ceaseless tribute to the averworking Energy, which struck open their fountains and ponred them down through the valleys? Ask of every region of the earth, from the hurning equator to the icy pole, from the rock-hound coast to the plain covered with is luxuriant vegetation; and you will find on them all the record of the Creator's presence. Ask of the countless tribes of plants and mismals: and shall they not testify to the action of the great Source of Life? Yes, from every portion, from every department of Nature, comes the same voice: everywhere we hear Thy name, () God: everywhere we see Thy lova. Creation, in all its length and breadth, in all its depth and height, is the manifestation of Thy Spirit, and without Thee the world were dark and dead. The universe is to us as the burning bush which the Huhrew leader saw: God in ever present in it, for it burns with His glory, and the ground on which we stand is always holy.

How then can we speak of that Presence as peculiarly in the sanctuary, which is shroad through all space and time?

Francis.

### GOD-the Fenntain of Beatitude.

Then art the source and ceatre of all minds, Their only point of rest, Eternal Woed! Prom Thee departing, they are lost, and rove At modom, without honour, hope, or pence. For this is all that soothes the life of man, this high enderwour, and his glad success, His strength to suffer, and his will to serve. But, 01 then boundeous Giver of all good, Thou art, of all Thy gifts, Thyself the crown! Give what Thou canst; without Thee we are poor, And with Thee rich; take what Thou will away.

Couper.

### GOD - An Indian's Conceptions of

Who is it that causeth the rain to rise in the high mountains, and to empty itself into the occum? Who is it that causes to blow the loud winds of winter, and that calms them again in the summer? Who is it that rars up the shade of those lefty forests, and labsts them with the quick lightning at His pleasure? The same Bring who gave to you a country on the other side of the waters, and gave ours to us; and by this title we will defend it.

Quickly | Left | Zehilo.

#### GOD-Confidence in.

Hew caimly may we commit ourselves to the hands of Him who beers up the world—of Him who has created, and who provides for the joys even of insects, as carefully as if Ha were their father?

\*\*Richter\*\*,

1877

### APPENDIX.

GOD-Clemency of

God! who is the Father of spirite, is the most tolerant. Man! who is the first of animals, is the most open states—yet he calls binnell the shadow of the Almighty. Man become sugry, and punishes for every little affront; God bears with all the insults and vices of man, who daily and norty is employed in endeavouring to offend Ilim. Man pretands to admire the benign nature of the Deity; yet when he sees another insiste list elements and conclaume, he calls him a fool. So much for man's consistent of man's consistent of the contract of th

#### GOD-the Creator.

He hate made the each by His power, He hate established the world by His whilon, and hate stretched out the heavens by His docertion.  $J_{eronioh}$ .

#### GOD - Decrees of

For mon to judge of their condition by the decrees of God which are hid from ms, and not by Ilis word which is near us and in our bearts, is a fit a man wandering in the wide ose, in a dark night when the heaven is all clouded absent, should yet troub've to steer his course by the stars which he cannot see, hat only generally a support of the stars which compass, which is a band, and would afford him such better that correctaint directions.

### GOD Duty to.

I cannot but take notice of the wenderful love of God to makind, who, in order to encourage obelines to this laws, has annested a present a well as a future reveard to a god blic; and has so intervoven our other and happiness together, that, while we are discharging our obligations to the one, we are, at the same time, making the happiness together, that, while we are discharging our obligations to the one, we are, at the same time, making the happiness for the other.

Makest, Make

### GOD-Eternity of.

Even as darkness, self-impreparel, brings forth Cocative light, and silence, speech; so beams, Knowo through all ages, hope and help of man, Our God ontolic, sole, original,

### GOD-in Everything.

One Spirit—His
Who wore the planted theras with bleeding beows—
Rules universal nation. Not a flower
But show among to stock to fixed the control of the con

Wise wonder-working wisider of the whole, Infinite, inconceivable, immense, The midst without beginning, and the first From the beginning, and of all Being last.

The forms with which He sprinkles all the earth, Happy who walks with Him; when what he finds Of flavour or of scent in fruit or flower, Or what ha riews of breatfild or grad. In Nature, from the Iraad majosite oak, To the green blade that twickles in the sm, Prompts with branchauco of a present God.

There is no createur in the world, wherein we may not see enough to wender at i. for there is no rowm of the centre, no price of group, no before for trig, wherein we see not the foreign of a Deiry; who they wished centre is man; now what man is its that can make best an history or a straw, much be say sensitive creature, or as no isse them as infinite power; is seen in every other that presents inside our gree; if, therefore, we look any other contribute of these bothly relationes, and we do not see Grief in everything, we are no better than breitid; and as were broad of the contribute of these bothly relationes, and we do not see Grief in everything, we are no better than breitid; and as were the contribute of these bothly relations and we do not see Grief in everything, we are not better than breitid; and as were those man, who had that a view man admissible aftering to the part that a view of the contribute of the part of t

### GOD Existence of.

And can there be who doubt there is a God, And life eternal 1—Whoo the river flows, Deny the fountain-head who will, the wave, That, corling, murmours farthest from its source, That source attests. Show me seen well-wrength work Of natter or of midol; thought no produce No nother, I conclude that such there was, Or this had never been, and give bim paralse. And why should seeme demus? When the poor alave, Doom'd by some tyrant's hard decree to starve, Wades to hid sungeon, on his rocky bod, From along, then wildly conto his eyes accound, 2 3 17 As if ie search of death, let him capp le osier frame awest berbage of the field To greet his familed lip, and from the spring, le centhen jar, the hosh draught to there His parching tongue; will be not straight exclaim That some kind hard hath eyed his prison door, And brought his homate? Will be not involved. A blessing on the donor as he tastles, And feets the temperate tisk of health return To cool the heated vensels of his heart, And pacify the fever in his brain? Tell him 'twas chance:—but no;—you could not thus Ahus his out, nor wound his aveiling soul In presence of the angel Gratitude.

Co

#### GOD-Argument for the Existence of.

There is no greater, at least to more pulpable and coartiseing, argument of the existence of a Drift, than the sharinflot act and wholm that efficences reside if in the make not constitution, the order and imposition, the order and uses, of all the parts and members of this stately flatfer of bovens and earth. For if in the works of art, as for annule a curious endinger are madeline, conceal, design, and direction to an end, aspecting in the whole frames, and in all the several pieces of it, the necessarily infer the being and operation of some intelligent architector engineer, why adal not also in the works of nature, that grandear and angulfacouse, that excellent contrivance for beauty, order, use, dee, which is otherwise in them, wherein they do so much transcend the effects of human are a infinite power and wholm exceeds feeting first the existence and efficiency of an Complexent and Alliwsie (vestor).

### GOD-Nature demonstrating the Existence of.

Little facts and elementators, in the consumy of Minighty (fool, have invisibilite charms for me, and serve, like others mere possibilities), the other mere possibilities and the effect and beautistic ansiers in addit of which everything has been central. In contemplating there, which is delightful looses may we not been. We sawy find is them the strongest with all the contemplating the effect of the strongest contemplation of the effect of the strongest with all the effect of the effec

#### GOD-Necessity for the Existence of.

Netwichstanding the consequences which may justly be drashed by siried and incorrigible beings, it is certainly at all limps and desirable that there should be a Col.. Social order, and devil genements, with all the solition contemplations of religion, its dignifying effect, and powerful constantions, clearly depend on the grand participle, that there is a being who made and whe generan the universe. Such a Being must be infinitely worthy of the adorstion of like subsoul cerestrow; if the mast have a cleim on their implicit solutions; and to film indeed which even in this life approximates the subsidies collutions happleness, and participally of that meant accelloner, which even in this life approximates the availance constants to its highest satisfantle perfection, here too are the clicities of smass, or offereity searchings, of every constitution colculated to promote present explication of smass.

### GGD-Creation Glorifies.

Every created thing glerifies God in its place, by fulfilling His will, and the great purpose of His providence: but man alone can give tongue to every creature, and pronounce for all a general decology. Kirly.

### GOD-Holiness of.

If do the overant of sercy been infinitely bely, ann could never have been aveced. We stand in used of belienes as well as nevery. The grees of cloi in the child of the in finitely star greepiring in to the late the native and which shime by day, or the toom and star which givers the night. Heliums raises man more highly sheve his fellow-men, than room electrate his in their helt raise ratios. The history of the rings that a late of the respective of the res

### GOD-Immutability of

OF OLD BASE THOU LAID THE SOURGATEN OF THE EARTH: AND THE BLAVANS ARE SHE WORK OF THY HANDA. THEY GRAVE PRIME SET THOU SHALL EXTURE: TAX, ALL OF THEM SHALL WAS COLLIAR. A GAMMENT: AS A "ENTIRE SHALL THOU CHANGE THEM, AND SHE AND SHE AND AND NEW AND SHALL DAYS OF THE AND SHE AND AND

### GOD- Majesty and Justice of.

WITH GOO IN TERRIBLE MAJESTY. TOUGHING THE ALMOSTY, WE CANNOT FIND HIM OUT: HE IS EXCELLED IN POWER, AND IN HERMOLY, AND IN PLEXITY OF JUSTICE: HE WILL NOT APPLICT. MICK TO THEREFORE FRAN HIM. Job.

### GOD - Kindnese of.

BECAUSE HE NATH SET HIS LOVE UPON MY, THERETORE WILL I SOLIVER HIM: I WILL SET HIM ON HOSE, RECAUSE HE HARH RENOWN MY NAME. HE SHALL CALL CFOX ME, AND I WILL ASSURE HIM. I WILL HE WITH HIM IN TROOQUEE; I WILL SERVING HIM AND SHOULD HE WITH HIM HE TROOQUEE; I WILL SATERY HIM AND SHOULD HIM HEN YEARLYSTON.

\*\*DURING HER STATE OF THE STATE OF T

### GOD - Living Without.

The bigk and the low, the yearing and the old, the large and the (fill, this claim arguments III the very name breaght measurines, and distinct our content and appears. If we matter (find that the yearing, III we want the fill of the proper in the content of the proper in the proper in the proper in the two is a reminded of their mindertween, that their time on earth is drawing must con each. If we mention fill as the great all perpy, we appear to be interfring with their picsourse. If we nearest in this the prest and to be beared, they will intuite that each adopted beinger pitcher to an benisher chase and matter. But the proor and smaller, that characteristic extractions of the content of the proor and smaller, it and thenever, write to keep God on of their thoughts, and below, so for as in them low, without Him, who, as the Appeals says, v or t for m any v or d v r r Illustration of the content o

### GOD-the Creator of Light.

AND GOD SAID, LET THERE BE LIGHT, AND THERE WAS LIGHT.

Muses,

#### GOD-Love o

It is the nature of overy artificer to tender and esteem his own work; and if God should not love Illicould not own. God's power never produces what Illa goodness counsel embrace. God effectimes, in the same man, distinguishes between the sinner and the creature; as a creature, He can love him, while as a nimer He does afflict him. South.

#### GOD-Celestial Love of.

Colesial love, with the affections of good and truth, and the perceptions thereoe derived, and at the same time with the delights of these affections and the thoughts thereoe derived, may be compared to a tree with beautiful branches, leaves, and fruits; the life's love is that tree; the branches with the leaves, are the affections of good and truth, with their perceptions; and the fruits are the delights of the affections, with their thoughts.

GOD-Universal Love of.

Canst thou believe the vast eternal mind Was e'er to Syris and Libyan sands confined? That He would choose this waste, this barren ground, To teach the thin inhabitants around, And leave His truth in wilds and deserts drown'd? There is an Eye that never sleeps Beneath the wing of night; There is an Ear that server shuts then sink the beams of light, There is an Arm that never tires When bouns atrough gives way;

When earthly loves decay.
That Eye is firld on scraph through;
That Ear is filld with angels' songs;
That Arm upholds the worlds on high;
That Love is throsed beyond the sky.
Hober

There is a Love that never fulls

The perfect leve of God knoweth no difference between the poer and the rich.

Pagmine

### GOD -Blessedness of Loving

Unto them that love him, God causeth all things to work for the best. So that with Him, by the heavenly light of steadfast faith, they see life even in death; with Him, even in heaviness and sorrow, they fail not of joy and constrict; with Him oven in poverty, affliction, and trouble, they neither perials, no are formaken.

reaken.

### GOD-Beauty of the Name of.

There is a beauty in the name appropriated by the Saxon nations to the Deity, unequalled, except by His most venorated Hehrew appellation. They called Him "Goo," which is literally "Tex Goos." The same word signifying the Peitry, and His most embaring quality.

There.

# GOD-Omnipotence of

Who guides below, and rules above: The great Duposes, and the mighty King: Than He most greater, next Hun none, That can be, is, or was: Supreme, He singly fills the therme. Heroco

Power is that glorious attribute of God Almighty, which furnishes the rest of His perfections. 'Tis His omninotence that makes His wisdom and goodness offectual, and succeed to the length of His will. Thus, His decrees are immutable, and His counsels stand; this secures His prerogative, and guards the sovereignty of His being: 'twas His nower which made His ideas fruitfet, and struck the world out of His thought, 'Twas this which answered the model of the creation, gave birth to time end nature, and brought them forth at His first call . thus, He spake the word, and they were made; He commanded, and they were created. 'Tis the divise power which is the basis of all things; which continues the vigour of the second causes, and keeps the sun and moon in repair. This helds everything constant to appointment, and true to the first plan; the revolutions of the seasons, the support of animals, the perpetuity of species, is carried on and maintained. Without this, things would soon run riot, and ramble out of distinction; the succours of life would be out off, and nature drop into decay. Omniscience and goodness without a correspondent power would be strangely short of satisfaction; to know everything without being able to supply defects, and remedy disorders, must prove an nupleasant speculation; to see so many noble schemes languish in the mind and prove abortive; to see the most consummate wisdom, the most generous temper, fettered and disarmed, must be a grievance; but when empipotence comes into the notion, the grandeur is perfect and the pleasure entire. Jeremy Collier.

#### GOD Omnipresence of.

O Long Time that statement is a non-livery in . Then inventor is constituted and non-livering indication of the configuration of the co

Appendix, GOD. 5

What can 'scape the eye
Of God, all-nosing, or deceive His heart
Omniscient!

God in everywhere! the God who framed Mankind to be one mighty family, Himself our Father, and the world our home.

What would you say, if whereve you trend, wheteve you were doine, wheteve thinking, whether is public or privace, with a conditional friend, billing your centred, and not planning them.—It, I say, you are any seasonately fixed on you, from whose watching, though you arrow cover as much, you could serve assays; and even if you cloud you one you to avail, you all finested that to got it of it was inprossible.—It is could previourly your every thought? The aryportion is awful enough. There is each an Feyn though the business and struggles of the world to other prevent to fine considering this waff trent. In crowdar we are to much mixture, and the provide of self-interest we not toe much prevently. In camps we are struggling for life and man and why no best think if it, is priced; all one, whether we much think of it, is priced; all one, whether we much this first it, it is priced; all one, whether we much this first it, it is priced; all one, whether we much this first it, it is priced; all one, whether we much this first it, it is priced; all one, whether we much this first it, it is found; all one, whether we much this first it, it is designed, all one, whether we much this first it, it is designed, all one, whether we much this first it, it is designed, all one, whether we much this first it, it is designed, all one, whether we much this first it, it is designed, all one, whether we much this first it, it is designed, all one, whether we much this first it, it is designed.

There is searching in the changed or being surremaded, even upon earth, by the Majorty on high, that gives a peculiar elevation not sevently of seal. To be sewered in the localises theor of subscene or neglected servors, that every gigh accounts to the circumstances, and every more in payer can be local in hower; join of that, in every year of the local in hower; join of that, in every year of the local in hower; join of that, in every year can be local in hower; join of that, in every year can be local in hower; join of that, in every year can be local in hower; join of that, in every year can be local in the even join of the controlleries of almost, to the who seems are a search of the controlleries of almost year in the controlleries of almost year.

GOD-Omniscience of.

Though all the doors are sure, and all our servants As sure boased with their alones, yet there is One That wakes above, whose eye no sleep can blod. He sees through doors, and darkness, and our thoughts;

the intrasions of an intermeddling world, has its "conversation in heaven."

And therefore, as we should avoid with fear, To think amies ourselves before His search, So should we be as surious to shun All cause that others think not ill of ea.

00D-Presence of.

At whose sight all the stars Hide their diminish'd heads.

Milton

00D-Loving Presence of.

God is the light which, never seen itself, makes all things visible, and clothes itself in colours. Thins eye feels not its ray, but thine heart feels its warmth.

00D-Protection of.

The ancel of the Lord excampeth bound about them that fear Him, and delivered them. Dood.

OD-Providence of

Must not the coulouf of a porent seem very unaccountable to a child when its inclinations are threated, when it is part to team letters; when it is a dollaged to avallow little polysic; to part with what is likes, and to unfler, and do, and see many things dose, coursey to its own judgment? Will it and, therefore, follow from hence, by a parity of resono, that the little shill sow, when it takes one partiel to judge of portunal providences—while of yearingty to criticise the consony of the shorted playse—will it not follow. I say, that such a judge of such matters much be spit to make very remove algebrach, settering the shings in themselves nonconstalle which have been also as the constant way and constalling of some shings; nor management of their portune, are constant when the constant of the constan

00D-Belief in the Superintendence of.

When any one acknowledges a moral governor of the world; perceives that domestic and social relations are perpetually operating, and seem intended to operate, to rotain and direct men in the path of duty; and feels that the voice of conceisions, the power of heart which results from a conne of virtue, and the consolations of derivation, are ver rouly in some their efficies, our registers and also into consoler at all our excitons. I we'll probably be willing to a browchedge also that the noise of a most government of such individual are not vanishing; and will feel to a browchedge also that the noise of a most government of such individual are not vanishing; and will feel to be a superior of the control of the c

#### GOD - Necessity for the Superintendence of

Our existence is objected as a secretarie of changes, which are taking place at every moment in correct, over which we have no power whatever, he of which, can be endworked an excessive of the existence, and the superintering power, of the bilety. The existence and this whole material universe is of the ones extract. Now, and the properties of the contract of the

### GGD Supremacy of

THINK, O LORD, IS THE OBEATRISE, AND THE FOWER, AND THE GLORY, AND THE VICTORY, AND THE MAJEST!: FOR ALL THAT IS IN THE BEAVEN AND IN THE EARTH, IS THINK: THINK IS THE RESOLON, O LORD, AND THOU ARE EXACTED AS BEEN ADDRESS.

DURING.

Thou, even Thou, art Lord alose; Thou hast made heaven, the beaven of heaving with all their doot, the faath and all things that are therein, the peas and all that is therein, and Thou pedservest them all

### GOD-Will of.

I cannot tell by what legic we call a tood, a bear, and an elephant, ngly, they being created in these outward abspace and figures which best express the actions of their inward forms, and having past that general visitation of God, who saw that all that like had made was good, that is, conformable to His will, which sholves deformity, and is the rule of order and beasty.

### GOD-Perfection of the Works of

What an immense workman is Gold !in ministure as well as in the great. With the cost hand, parhaps, It's making a ring of one instruct binamed miles in disaster, revolver near all patter life. Storms, and with the other is forming a tooth in the ray of the feather of a humaning-kind, or a point in the olaw of the foot of a increceopic insect. When I less works in insistence, every timing in gilded, polithed, and perfect, but whence is under by human art, as a needle, dee, when viewed by a mismoscope, appears rough, and coarne, all hore face.

### GGD-Wership of.

God is the source and fountain of leve, and which may be divided into three parts—the receiving from Him, the conforming to Him, and the reposing and trusting in Him.

It were better to have no opinion of God at all, than such an opinion as is unworthy of Him; for the one is unbelief, and the ether is contumely; and certainly superstition is the reproach of the Deity.

Becom.



### CHRIST-Divine Attributes of.

Christ is a rare jewel, but mere have not His value, a sum which ever shines, but men perceives not His diptience, nor with it His [24]. He is a gaudes full of severe, a hive full of hower, a nor without a spet, a star over height, a foundain sever full, a brook which ever flows, a rose which ever blooms, a foundation which never public, a guide who saver arm, a friend how never foruskes. No used can fully grade Hig days; His leastly, His work, His importance, no tempor can fully declare. He is the source of all good, the foundain of every sceelency, the mirror of speticities, the light of howers, the wonder of each time in material post, distributly a large; the sum of bits, the way of His, and life is fair vary. "He is a dispetier levely," says the saint; a morning without clouds, as day without night, a new without a thour. His high only his the hoserpooth, they we been tendered and a sky without night, a new without a thour. His high only his the hoserpooth his way to the manuscript His boson, guided by His eye, instructed by His lips, swamed by His lever would are his His for the history of howers are his His. Internet.

Ilin, the self-existed and infinite mind, the Christian beholds unceasingly an object of boundless malnisting, ramount, beauty, and overfiness, commanding by the dischermer of the charter, and classical finite admiration, complacency, love, and praise, expanding every view, refining every affection, and comoling every with the complacency, love, and praise, expanding every view, refining every affection, and comoling the every attribute.

HIS NAME SHALL BE CALARD WONDERFUL, COUNSELON, THE MIGHTY GOO, THE EVERLASTING PATHER, THE PRINCE OF PRACE.

# CHRIST - Benevolent Character of.

In the beautiful character of the blossed Jeans there was not a more striking feature than a certain seculity, which disposed Illino take part in every new's afficients to which be was switzen, and to be roundy to afficed its mirror-three relief. He was up to be particularly touched by instances of domestic distrace, in which the mediring gives from those feelings of friendship, proming not of antennal affection and habitated embersaries, which constitute the perfectise of man as a social creature, and distinguish the society of the lowership from the intuitively hereling of the lower animals.

### CHRIST- Divinity of.

IN HIM WHELLETH ALL THE PULNESS OF THE GOISLEAD BODILY.

St. Paul.

## CHRIST-Fidelity to

We indeed may not be called upon to make any very difficult sarriflow on account of our religion, or the subage may extrainfy of shoor, or to home any signal subages in that behalf. Ye the faitfull (Virteina will alway, find execution; in which he may tentify his fieldity to thrist, by laboring to instruct the ignorant, and by similarizing assistance and consiste to his difficult bettern. And be whe engages in these works and allohous of too, provided be engage in them with Christian produces as well as Christian homeroleuce, in making lands before a bandhale artschame to Christian fails.

#### CHRIST- Gentlement of

The best of man.

That e'er wore earth about him was a sufferer,
A soft, meek, patient, bumble, tranquil spirit;
The first true geotheman that ever breathed.

CHRIST—and Godhead.

The moon, a ofter but not loss beautiful object than the our, returns and communicates to manked the first of the ours, in a greatle and oblighted manner, exactly united to the strength of the busines eye; and illustrians and most boastiful enhiben, in this and several other respects, of the driven bedween of marking; who, softward the higheston of the following highest produced to the spectrum of the following highest produced the highest produced by the following highest produced the spectrum of the following highest produced the spectrum of the following highest produced the spectrum of the following highest produced the spectral produced by the spectrum of the following highest produced the following highest produced the spectrum of the following highest produced the following highest produced the spectrum of the first produced the following highest produced highes

### CHRIST - Benign Infinence of

He walked in Jadea eighteen hundred years ago; Ilia aphere melody, flowing in wish native tones, took captive the walked about ones, and, being of a truth sphere naclody, still flows and sounds, though now with thousand-fold accompanion and rich symphonies, through all our hearts, and modulates and divinely bends them. "Curfyle."

### CHRIST-Life of.

I find the life of Christ made up of two parts; a part I can sympathize with as a man, and a part on which I am to gaze; a beam sent down from beaven which I can see and love, and another beam shot into the infinite that I cannot comprehend.

Barr.

### \* CHRIST-Every instance of Love to, is a case of reconciled affection.

"How bould alw, the particulated whose history are better stretch than their of any 5 his consumparity."
Deven should be alwe, the our of a expansive, free out all at one on this to we do be the center of all things, been should be able to be a simple of the center of all things, but the constraint of all their should be able to be constraint of the constraint of all their should be able to be constraint to his own advantage, who incorporate with hissenf, that a state, but the himson new. Woodfull it the human sould laid in the form the constraint of the constrain

"Christ speeks, and at once generations become his by stricter, closer ties than those of blood, by the most secred, most indissoluble of all nuions. He lights up the flame of a love which consumes self-love, which prevails over avery other love.

"The funders of other riligion never conceived of this appoint laws, which is the costons of Christianity and is beautifully called sharity. Hence it is abst they have strick upon a rock. In every strick pairs a rock. In revery strick pairs a rock. In revery strick pairs a minch maked with its thing, namely, to make howly blood, man deeply fields his own importance. So that Christia greatest minches maked will it the reging of chainty. All the absorbed pictice in him rate to the washeful, superstand, enabled how. The more I think of this, I admire it the more; and it convinces me absolutely of the divisity of Christ.

"I have inspired multitudes with seek affection for an that they would die for no. God field that I should compare the soldies's cathosiase with Criticatin charity, which are a wallies not free cause. But, after all presence was necessary—the lightning of my yee, ny weige, a worl from no, then the secred five was kindled in this least. I also, indeed, posses the secred of this nagical power which lifts the sock, lust I walk never list to any one; none of my general ever learnt if from no; no lawer lawer leaves the most interest to the secret of perpetuating my notes and love for me in the bester of nears, and to effect then things without physical means.

"Now that I am at 88. Holean, now that I am alone, channel to the rock, who fights and wine empires deen? Where are not to share noy midstructs, any to third on 20. Who bears the instelled for an in Europe? Who remains shifted to mo? Who he are instelled for an in Europe? Who remains shifted to mo? where are my friends? Yez, two or three of you, who are immertalized by this debility, so share, ya all-erits on yet?. Seed, in the fixed orger start now. So it was with Cerear and Actuardae, and I too am forgathet; and the manse of a conquerce and an empiror i a coding theme: our reploits are subsky given to applie by their tracts, who is in in judgeous gap ma, sawding an excensive or praise. So his nows to be the fixed for the great Nayslews. What will always between my deep mivery and the clernal simplions of Crisis, which is the death of a fixed is a testable ever all the north it is the death. "More than the start of the start o

\* I meet this extract as it is boutlifully expressed; I have, however, no proofs of its authenticity beyond the statement of Mr. Nebenish Adams, Dib., who give it as here queted in a errors prescried before the American Dand of Countsistance for Foreign Massons, September, 1835, on the noticety of Dr. (d. de Febre, Profuser in the Theological Scalinary at Mechanhan, Prance, in a letter to the New York Ubberry, April 16, 1812.

I would gladly believe its revity, but I am afraid what Lamartine says, in his 'Histoise de la Rosinuration,' of the Coptivity of 8s. He-lens is too true:—
"Their mendague of six years, which he addressed to the weekl

in accessory or ext years, want to material used of which from the summit of this rock, and the most brieflad useds of which were registered by his courtiers to be transmitted to his symmitons as the grapted for party, was rothing more than a long diplomatic lock, work of good faith, addressed to his partisans, and speaking in turns the insprange of all the factions that he whiched to neurish with his accomp; instead of being the disclusterated, many exer, and religious efficient of a soul which bequestles with its greatness, its fallings, its fruith, so it is reportance to the world."

Foreyth, in his "Correspondence of Sir Hadaon Lows, concludes with an able resume of the character of Napolona, and in the following weeks resulted as a far that that certain books recently published would strive to ignore:—

• Cun re, time, be so infertuated with horseworklys, so duzzied, by the spleadure of inferticetual gifts, as a fuller countries to treat greatly and speak lightly of this centrage of veneigy, this diskings per large and peak lightly of this centrage of veneigy, this diskings per large and the period of percy, absolves him from the deligiation to observe right and warrage. And we do in effect fresh that decirities when we because of the period of the period

APPENDIX. CHRIST. 515

### \* CHRIST - the Person of.

As many were astonished at tree; this verge was so marred more than any man, and his form more than the boxs of men.

Inside, chap. Bit. 14.

... HE HATH NO FORM NOR CONCLINENS; AND WHEN WE SHALL SEE HIM, [THERE IS] NO REQUIT THAT WE SHOULD DESIRE HIM. HE IS DESPRISED AND RESECTED OF MEN; A MAN OF SORBOWS AND ACCUMINED WITH ORDER. Dails, char, hill, 3, 4.

For verly he took not of [him the nature of] andels; but he took on [min] the seed of Abraham.

For in that he himself hath suffered being tempted, he is able to succeed them that are tempted,

Hebridge, chap. It. 16, 18.

#### CHRIST-always the Same.

JIMUS CHEEST THE SAME YESTERDAY, TO-DAY, AND FOR BYER.

St Poul

# CHRISTIAN—Blessedness of being a.

I have known what the nejsyments and advantages of this life are, and what the more refined pleasures which henring and intelligation power can be known, and with all the experience that are retired the areas agins, I, now on the even of any departure, declare to you (and caready pery that you may beredier live and act on the coartistics) had bould beautiful as you called accommand to the coartistics) and bould have like all califords, and a great bleasing it is to have kind, initiating, and lower kind, in the state of the boundary and a great bleasing it is to those kind, initiating and lowing friends and relatives; but, that the greatest of still beautings, as it is the most recombing of all privileges, in so is the deced a Christian.

### CHRISTIAN - not to be Despised.

However the world may affect to despise the genuine Christina, it is beyond their power, the feel to assumily the necessity of statisting that very state of feeling and disposition which is deletped in such a character to entertain in their bart any zone or depending opinion of the character which they appearedly underraince. Every thought which was wrange from their conscious by the newboods intrinsion upon their consupplation, resist in judgment against their indifference—God has not permitted them to despise a tree Christian. Hey may pass him by which has hardly and supertition collesses, they may briefly him with a tensing and arready interpretation of the passion of the constraints. It is to be a supertition of their collesses and the constraints are constraints of the constraints. It is to be a supertition of the collesses are passion of the collesses and the collesses are constraints. It is to be a supertition of the collesses are constraints and the first and the collesses are constraints. It is the collesses are constraints are because the collesses are because the constraints of the virtual constraints are because the collesses are constraints. It is the constraint of the virtual constraints are constraints and the collesses are constraints and the collesses are constraints. It is the constraints are the collesses are constraints are constraints. It is the constraints are constraints are constraints are constraints. It is the constraint of the constraints are constraints are constraints. It is the constraints are constraints are constraints are constraints. It is the constraints are constraints are constraints are constraints. It is the constraints are constraints are constraints are constraints. It is also as the constraint of the constraints are constraints. It is also as the constraint of the constraints are constraints. It is also as the constraint of the constraints are constraints and the constraints are constraints. It is also as the constraints are constraints are constraints. It is also as th

### CHRISTIAN-Gold in the Ore.

A Christian in this world is but gold in the ore; at death, the pure gold is melted out and separated, and the dross cast away and consumed. Fixed.

### CHRISTIAN-Proofs of a.

He that can apprehend and consider view with all her baits and scenning pleasures, and yet abstrain, and yet elatingainsh, and yet prefer that which is truly better, he is the true wayfuring (Christians. I cannot praise a fugitive and elosistened virtue unexercised, and unbreathed, that mover sullies out and sees her adversary, but aliabe and of the once where that insured against all to be run for, not without data and helat. Milko.

### CHRISTIAN - Virtues of a.

If these be Christian virtues, I am a Christian; The faith that can inspire this generous change Must be divine—and glows with all its God! Friendship and constancy, and right and rity, All these are lessons I had beant before; But this semataral grandeur of the seel Is more than mortal, and outreaches virtues; It draws, it charms, it binds me to be Christian.

### CHRISTIAN-Wit of a.

A Christian's wit is inoffecaive light, A beam that side, but never grieves the sight; Vig'rous in age as in the fush of youth, "I'm always active on the side of truth; Temp'rance and peace ensure its healthful state, And make it brightest at its latest date."

#### CHRISTIANS-Nominal

Many there are who, while they bear the name of Christians, are totally unacquainted with the power of their divine religion. But for their criners the Gospel is in no wise answerable. Christianity is with them a geographical, not a descriptive, appellation.

### CHRISTIAN SOLDIER-Faith of a.

It is more to the bosonr of a Christian soldier by faith to overcome the world, than hy a monastical vew to retreat from it; and more for the bessur of Christ, to serve Him in a city, than to serve Him in a cell. Matther Here.

# CHRISTIANITY—without Ceremenial.

CHRISTIANITY - Difficulties of.

Christianity has no coressonial. It has forms for forms are essential to order; but it disdains the felly of attempting to reinforce the religion of the heart by the astics of the mind.

\*\*Croy.\*\*

Now you say, alsa! Christianity is hard: I great it; but galaful and happy. I contours the difficulty, when I respect the advantage. The greatest labours that have answerable requirals, are less than the least that have no regard. Believe man, when I look to the reward, I would not have the work savier. It is a good Master whom we serve, who not early pays, but gives; not after the proportion of our earnings, but of lits own nercy. Bishop Ids.

### CHRISTIANITY-Distinctions in.

The main distinction between real Christianity and the system of the bulk of neminal Christians, chiefly consists in the different place which is assigned in the two schemes to the reculiar doctrines of the Gospel These, in the scheme of neminal Christians, if admitted at all, appear but like the stars of the firmament to the ordinary eye. These sulendid luminaries draw forth, norbane, occasionally, a transient expression of admiration when we beheld their beanty, or hear of their distances, magnitudes, or properties; new and then, too, we are led, perhaps, to muse upon their possible usen; but, however eurious as subjects of speculation, it must, after all, be confessed they twinkle to the common observer with a vain and "idle" lustre; and, except in the dreams of the astrologer, have no influence on human happiness, or any concern with the course and order of the world. But to the real Christian, on the contrary, these prediar dectrines constitute the centre to which he gravitates? the very sun of his motem! the erigin of all that is accellent and levely! the source of light, and life, and motion, and genial warmth, and plantic energy! Dim is the light of reason, and cold and comfortless our state while left to her unassisted guidance. Even the Old Testament itself, though a revelation from Heaven, shines but with feeble and scanty rays. But the blessed truths of the tiespel are new unveiled to our eyes, and so are called upon to behold and to enjoy "the light of the knowledge of the glory of God, in the face of Jesus Christ," in the full radiance of its meridian spleadour, The words of Inspiration best express our highly-favoured state: "was all, with open face, beholding as in a glass the glory of the Lord, are changed into the same image, from glory to glory, even as by the Spirit of the Lord."

#### CHRISTIANITY-Evidences of.

As to the Christian religion, besides the strong evidence which we have for it, there is a balance in its favourfrom the number of great near who have been convinced of its truth after a serious consideration of the questien. Gretins was an assets man, a lawyer, a man accentanced to examine evidence, and he was convinced. Gretins was not a reclaus, but a man of the world, who eventually had no him on the side of religion. Sir Janaz-Newton set out, an infield, and came to be a very firm believer.

Johann.

### CHRISTIANITY-Gifts of

Onrs is a religion jealoua in its demands, but how infinitely prodigal in its gifts! It troubles you for an hour, it repays you by immeriality.

Beluer Lytton.

### CHRISTIANITY -true to the Heart.

Christianity, which is always true to the heart, knows no abstract virtues, but virtues resulting from our wants, and useful to all.

\*Chatembriand.\*

### CHRISTIANITY-Intent of.

Christanity ald not come from heaven to be the assumement of an idle hour, to be the food of mere imagination; to be "as a very levely song of one that that a phessant voice, and played well upon an instrument." No; it is intended to be the guide, the guardian, the companion of all our bours: it is intended to be the food of nor immortal suitivit; it is intended to be the nervine occuration of our whole existence.

### \* CHRISTIANITY—not the subject of Mothematical demonstration.

Finny said.—"You do not know, perhaps, that I am in the service of the peaks, as professor of mathematics, and therefore I demand of you mathematical proofs of the truths of Christianty, 2 said, "Do you ever eat?" Finny, "Yee." Dr. Wolf, "Why do you do so?" Finny, "Hunger compels me." Dr. Wolf, "Can you prove that mathematically?" "My fig. Missings Jearned.

### CHRISTIANITY-Mission of.

Christ appeared—the currer of Degmins was checked, the fast of selation was scaled. A Character and a religion were placed before the eyes of michiteris innocerable, in the locuts and philosophy of their saters. Unlike all other founders of a religious faith, Christ had as widners, as desire of danisance; and His system, unlike all other systems of worship, was holotless, boundaughly beneficent, interpretably pure, nead—most metrolloss of all—wont to break all bonds of body and sool, and to cast down every temporal and every spiritude. William Morally and the second of the second of

### CHRISTIANITY-Divine Origin of.

Christianity bars all the marks of a drivan original, it cane down from boxers, not lin geneine purpose is carry us up thintie. It is nother is cold; it was forted from the beginning, by prophecies, which gives elevere and heighter as they approached the period of their accomplishment. It was confirred by minches, which continued till the religion they illustrated was established. It was marked by the food of its anther; is decirine are pure, relimine, consistent, if a precept just and hely; its versible is sprinted; its service reasonable, and particularly the property of the state of the contraction of the property of the state of the contraction of the property of the state of the contraction of the property of the state of the contraction of the property of the state of the deciring inself of the computer of the points of its printed, it reports the insensation; is showed the variety of its genine, the charge of the trick, though right in themselves, may be subplict them have marries, such as construct on the contraction of its pleasures. This religion does not consist in external conformity to practice which, though right in themselves, may be subplict them have marries, and to assure recent purposes, it is not a religion of forms, and the consistency of the confidency of the confid

### CHRISTIANITY-Perversion of

It may be well said of many who would be displeased with you if you did not call them Christians, that had some of the ancient heathen sages lived to the present day, to see their abominations and vices, they would have despised that faith which produced no better works.

Alas! how has the social spirit of Christianity been perverted by fools at one time, and by knaves and bigute at another; by the self-tormentors of the cell, and the all-tormentors of the conclave.

\*\*Collon.\*\*

\*\*Collon.\*\*

## CHRISTIANITY—Teaching of.

was called, and perform all the dusies of it. It even stignations those that provide not for their own, with telling them that they are worns than infidels. When it requires us "to be temperate in all things," it plainty tells as, that we one use all things temperately; when it direct as "to make our moderation known unto all nom," this evidently implies, that within the bounds of moderation we may only all the reasonable conveniences and construcor the present like.

#### CHRISTIANITY - Treatment of

Service onl base and mercuary is the notion of Christian practice among the bulk of mosion (Ghristians, they give no nore than they dure no trivibled): they shated from nothing but what they seem and practice. When you state to them the doubtful quality of any action, and the consequent obliquies to desir from it, they ply to you in the very print of Shybork, they cannot find in the bond. In a best, they taxes that of the consequent of the constraints of the consequent of the consequence of the consequ

#### CHRISTIANITY-Value of.

We live in the midde of blookings, till we are stately insensible of their greateness, and of the scarce from which they fore. We spack of our criticalism, our state, our fleedism, our laws, our fleedism of all is due to Caristianity. But Christianity out of the page of man's history, and what would his laws have been? what has evidinated. "Christianity is united up with our every being and our depths, there is not a familiar object on the contract of the co

### . CHRISTIANITY-Vitality of.

Waft, waft, ye winds, his story,
And you, ye waters, roll,
Till, like a sea of glory,
It spreads from pole to pole;
Till o'er our ranson'd nature
The Lamb for sinners slain,
Bedeemer, King, Creater,
Is blies returns to reign.

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